ICOM

INSTRUCTION MANUAL

HF ALL BAND TRANSCEIVER

IC-725



Icom Inc.

CAUTIONS

(1) Before using the IC-725, read all instructions carefully and completely.

(2) **SAVE THIS INSTRUCTION MANUAL** – This instruction manual contains important safety and operating instructions for the IC-725.

(3) **NEVER** connect the DC power cable to an AC outlet. This will ruin the transceiver.

(4) **NEVER** apply more than 16 V DC to the DC POWER SOCKET on the transceiver rear panel. Check the power source voltage before connecting the power cable.

(5) **NEVER** allow children to touch the transceiver during operation.

(6) **NEVER** expose the transceiver to rain, snow or any liquid.

(7) **AVOID** using or storing the transceiver in temperatures below –10°C (+14°F) or over +60°C (+150°F).

INTRODUCTION

Icom's new IC-725 HF ALL BAND TRANSCEIVER is designed to meet the increasing demand of today's amateur radio users for transceivers with fewer controls and switches, especially for hands-free mobile operation.

The IC-725 has the following advanced features:

- DDS (Direct Digital Synthesizer)
- 26 user-programmable memory channels
- 3 scan types
- Selectable tuning rate in 10, 20 or 50 Hz steps
- Band stacking register capability
- 10 dB preamplifier
- 20 dB attenuator

To thoroughly understand the capabilities of your new IC-725, please read this manual carefully before attempting operation. If you have any questions regarding the operation of the IC-725, feel free to contact your nearest authorized Icom Dealer or Service Center.

OPERATING CAUTIONS

(1) In any mobile operation, **DO NOT** operate the transceiver without running the vehicle's engine. The vehicle's battery will quickly run out if the transceiver power is ON while your vehicle's engine is OFF.

(2) In maritime mobile operation, keep interconnection cables as far away as possible from electronic instruments to prevent instrument malfunctions.

(3) **BE CAREFUL!** If the transceiver is not securely mounted with bolts and nuts, personal injury or transceiver damage could occur due to braking, wave shock, vibrations, etc.

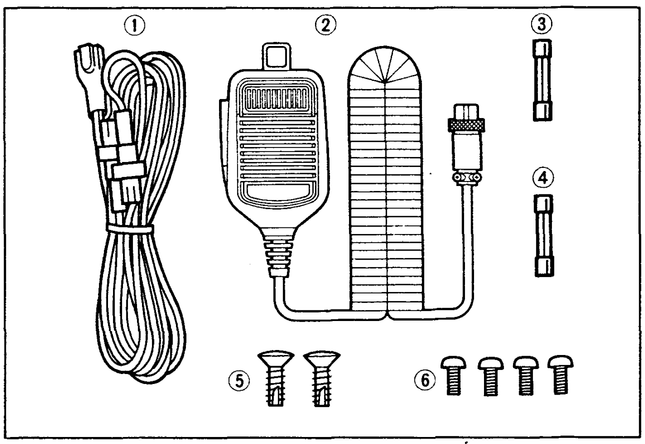
(4) **AVOID** using the transceiver in excessively dusty environments.

(5) **AVOID** placing the transceiver in direct sunlight.

(6) **BE CAREFUL!** The heatsink may become hot when operating the transceiver continuously for long periods.

(7) Transmitting without an antenna may damage the transceiver.

UNPACKING

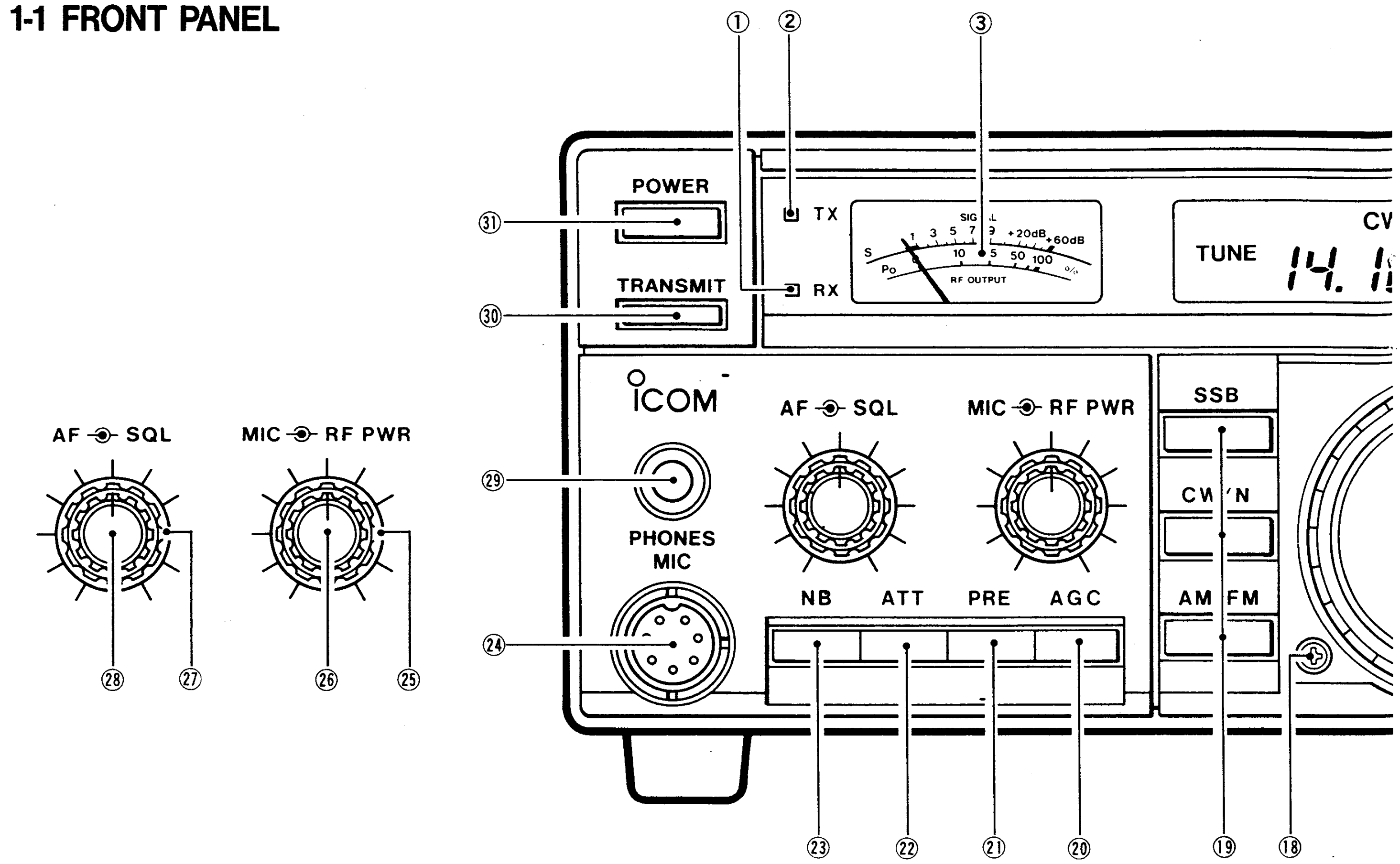


Accessories included with the IC-725:	Qty.
① DC power cable (OPC-025A)	1
② Hand microphone (HM-12)	1
③ Spare fuse (20 A)	1
④ Spare fuse (4 A)	1
⑤ Screws B1 4 x 12 CR (for optional MB-23 installation)	2
⑥ Screws C0 3 x 6 (for optional MB-23 installation)	4

TABLE OF CONTENTS

1 CONTROL FUNCTIONS

1-1 FRONT PANEL



① **RECEIVE INDICATOR**
Indicates that the squelch is open.

② **TRANSMIT/ALC INDICATOR (p. 16)**
Lights when the transceiver is transmitting.

③ **METER**
Shows the strength of a received signal and relative output power while transmitting.

④ **VFO SWITCH [VFO] (pgs. 14, 22)**
Selects VFO A or VFO B for tuning purposes.

⑤ **SPLIT SWITCH [SPLIT] (p. 21)**
Selects split operation.

⑥ **MEMORY CHANNEL UP/DOWN SWITCHES [UP] [DOWN] (p. 22)**
Changes memory channels.

⑦ **MEMORY WRITE SWITCH [MW] (p. 22)**
Stores the displayed frequency and mode into the displayed memory channel.

⑧ **MEMORY READ SWITCH [MEMO] (p. 22)**
Selects MEMORY CHANNEL mode.

⑨ **RIT SWITCH [RIT] (pgs. 15, 21)**
Turns ON and OFF the RIT circuit.

⑩ **RIT CONTROL (pgs. 15, 21)**
Shifts the receive frequency when the RIT function is ON.

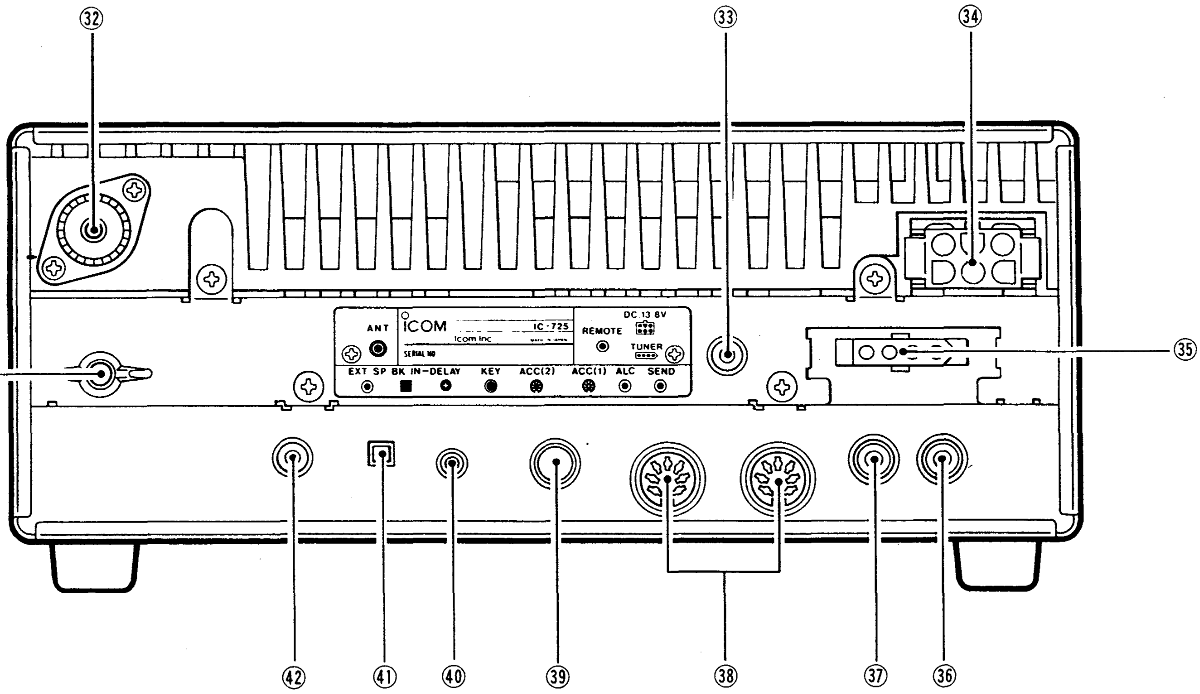
⑪ **FUNCTION SWITCH [FUNC]**
Activates the secondary switch functions.

SWITCH	FUNCTION
[FUNC] + [VFO]	Activates programmed scan. (p. 23)
[FUNC] + [SPLIT]	Equalizes the frequency and mode of operation of the two VFOs.
[FUNC] + [MEMO]	Activates memory scan. (p. 23)
[FUNC] + [MW]	Activates the frequency transfer function. (p. 22)
[FUNC] + [RIT]	Adds the RIT shift frequency to the displayed frequency. (p. 21)
[FUNC] + [TUNER]	Bypasses the AH-3 HF AUTOMATIC ANTENNA TUNER (optional). (p. 10)
[FUNC] + [kHz]	Changes the tuning step. (p. 14)
[FUNC] + [BAND]	Turns ON and OFF the 10 Hz digit on the frequency display. (p. 14)
[FUNC]+[LOCK] +[MEMO]	Activates the mode selected memory scan. (p. 23)

⑫ **ANTENNA TUNER SWITCH [TUNER] (p. 10)**
Tunes the AH-3 HF AUTOMATIC ANTENNA TUNER (optional).

⑬ **BAND SWITCH [BAND] (p. 13)**
Allows the MAIN DIAL to select bands only.

1-2 REAR PANEL



㉜ **ANTENNA CONNECTOR (pgs. 5, 6)**
Connects a 50 Ω antenna with a PL-259 plug.

㉝ **CI-V REMOTE CONTROL JACK (p. 12)**
Designed for use with a personal computer for remote operation of transceiver functions.

㉞ **DC POWER SOCKET (p. 7)**
Accepts 13.8 V DC using the supplied DC cable.

㉟ **TUNER CONTROL SOCKET (p. 9)**
Accepts the optional AH-3 HF AUTOMATIC ANTENNA TUNER control cable.

㊱ **SEND CONTROL JACK (p. 8)**
Goes to ground when transmitting to control an external unit.

㊲ **ALC INPUT JACK (p. 8)**
Connects to the ALC output jack of a non-Icom linear amplifier.

㊳ **ACCESSORY SOCKETS (p. 11)**
Input and output connections for external equipment.

㊴ **CW KEY JACK (pgs. 6, 18)**
Accepts a straight key or electronic keyer with a standard 1/4 inch 3-conductor plug.

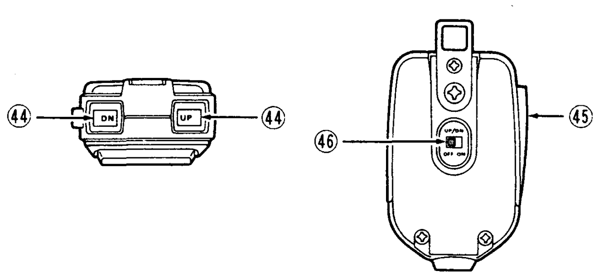
㊵ **CW BREAK-IN DELAY CONTROL (p. 18)**
Adjusts the transmit-to-receive switching delay time for CW semi break-in operation.

㊶ **CW SEMI BREAK-IN SWITCH (p. 18)**
Turns ON and OFF the CW semi break-in operation.

㊷ **EXTERNAL SPEAKER JACK (p. 6)**
Connect a 4 ~ 16 Ω speaker here, if required.

㊸ **GROUND TERMINAL (pgs. 5, 6)**
To prevent electrical shocks, TVI, BCI and other problems, connect this terminal to ground.

1-3 MICROPHONE (HM-12)

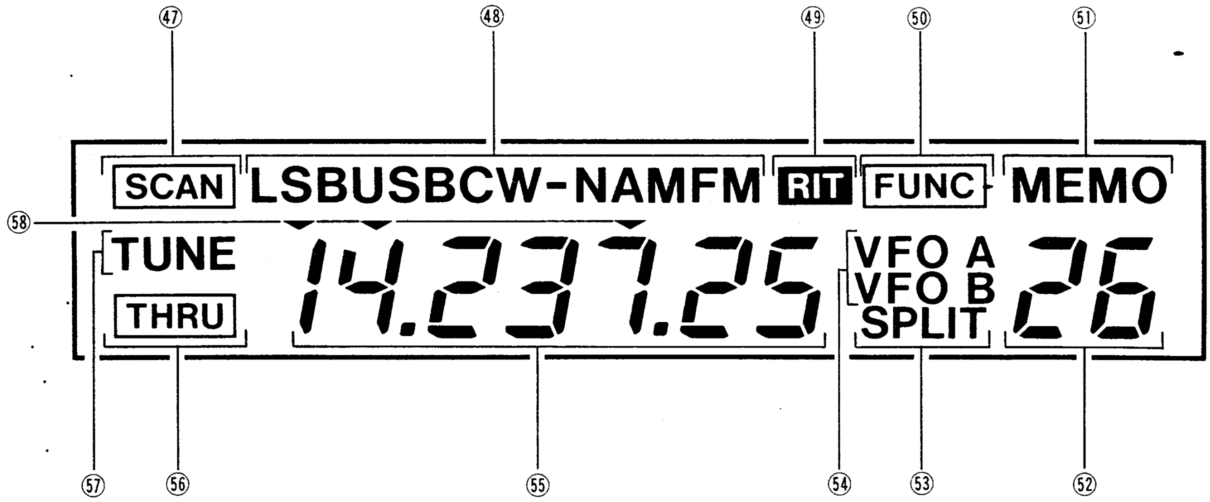


㊹ **UP/DOWN SWITCHES**
Changes the operating frequency or memory channel. Push and hold either of these switches to change the frequency or memory channel continuously.

㊺ **PTT SWITCH**
Push to transmit.

㊻ **UP/DOWN ON/OFF SWITCH**
Prevents accidental changes of the [UP] and [DN] switches.

1-4 FUNCTION DISPLAY



㊼ **SCAN INDICATOR "SCAN" (p. 23)**
Lights when scan is operating.

㊽ **MODE INDICATORS**
Indicates the operating mode.

㊾ **RIT INDICATORS "RIT" (p. 21)**
Lights when the RIT function is turned ON.

㊿ **FUNCTION INDICATOR "FUNC"**
Lights when the [FUNC] switch is pushed.

51 **MEMORY INDICATOR "MEMO" (p. 22)**
Lights when MEMORY mode is selected.

52 **MEMORY CHANNEL INDICATOR (p. 22)**
Shows memory channel numbers.

53 **SPLIT INDICATOR "SPLIT" (p. 21)**
Lights when split operation is being used.

54 **VFO INDICATORS "VFO A" "VFO B" (p. 14)**
Indicate a VFO mode.

55 **FREQUENCY DISPLAY**
Displays the operating frequency.

56 **THROUGH INDICATOR "THRU" (p. 10)**
Lights when the AH-3 HF AUTOMATIC ANTENNA TUNER (optional) is bypassed.

57 **TUNING INDICATOR "TUNE" (p. 10)**
Lights when the AH-3 HF AUTOMATIC ANTENNA TUNER (optional) is being tuned.

58 **TUNING DIGIT INDICATORS "⌄" (pgs. 13, 14)**
Points to the lowest digit changed when the MAIN DIAL is rotated.

2 INSTALLATION

2-1 UNPACKING

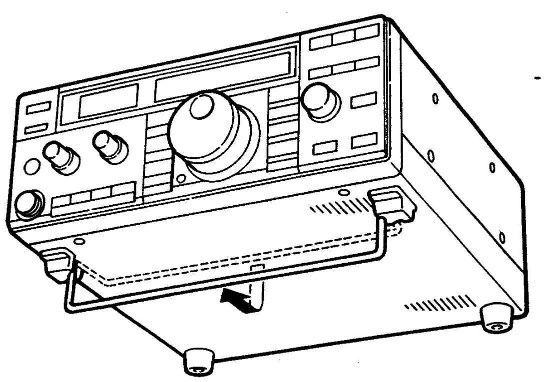
After unpacking, immediately describe any damage to the delivering carrier or dealer. Keep the shipping cartons. For a description and a diagram of accessory equipment included with the IC-725, see UNPACKING on the inside front cover.

2-2 MOUNTING THE TRANSCEIVER

Select a location for the transceiver that allows adequate air circulation and access to the front and rear panels. Do not place in areas subject to extreme heat, cold, or vibrations, or near TV sets, radios and electro-magnetic sources.

For mobile installations, an optional IC-MB5 MOBILE MOUNTING BRACKET is available. Select a location which can support the weight of the transceiver and does not interfere with the operation of the vehicle.

●ADJUSTABLE ANGLES



The stand on the bottom of the IC-725 gives the transceiver two selectable angles.

2-3 ANTENNA

Select an antenna, such as a well-matched 50 Ω antenna and feedline. The transmission line should be a coaxial cable. VSWR should be less than 1.5:1.

CAUTION: Protect your transceiver from lightning by using a lightning arrestor.

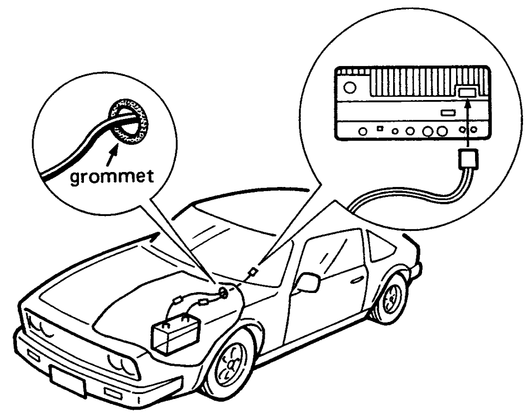
2-4 GROUNDING

To prevent electrical shocks, TVI, BCI and other problems, ground the transceiver through the GROUND terminal on the rear panel.

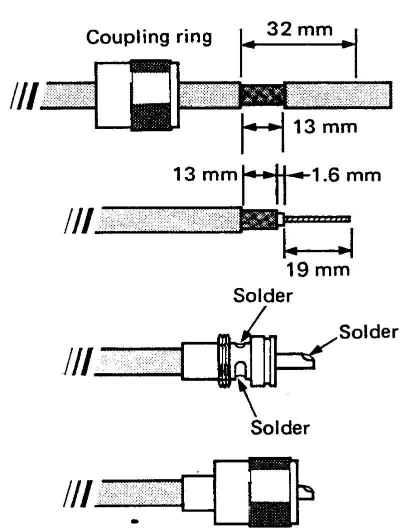
For best results, connect a heavy gauge wire or strap to a long earth-sunk copper rod. Make the distance between the GROUND terminal and ground as short as possible.

2-5 WIRING THE DC POWER CABLE

Insert a rubber grommet to the DC power cable to prevent shorting.



●PL-259 CONNECTOR INSTALLATION



1) Slide the coupling ring over the coaxial cable.

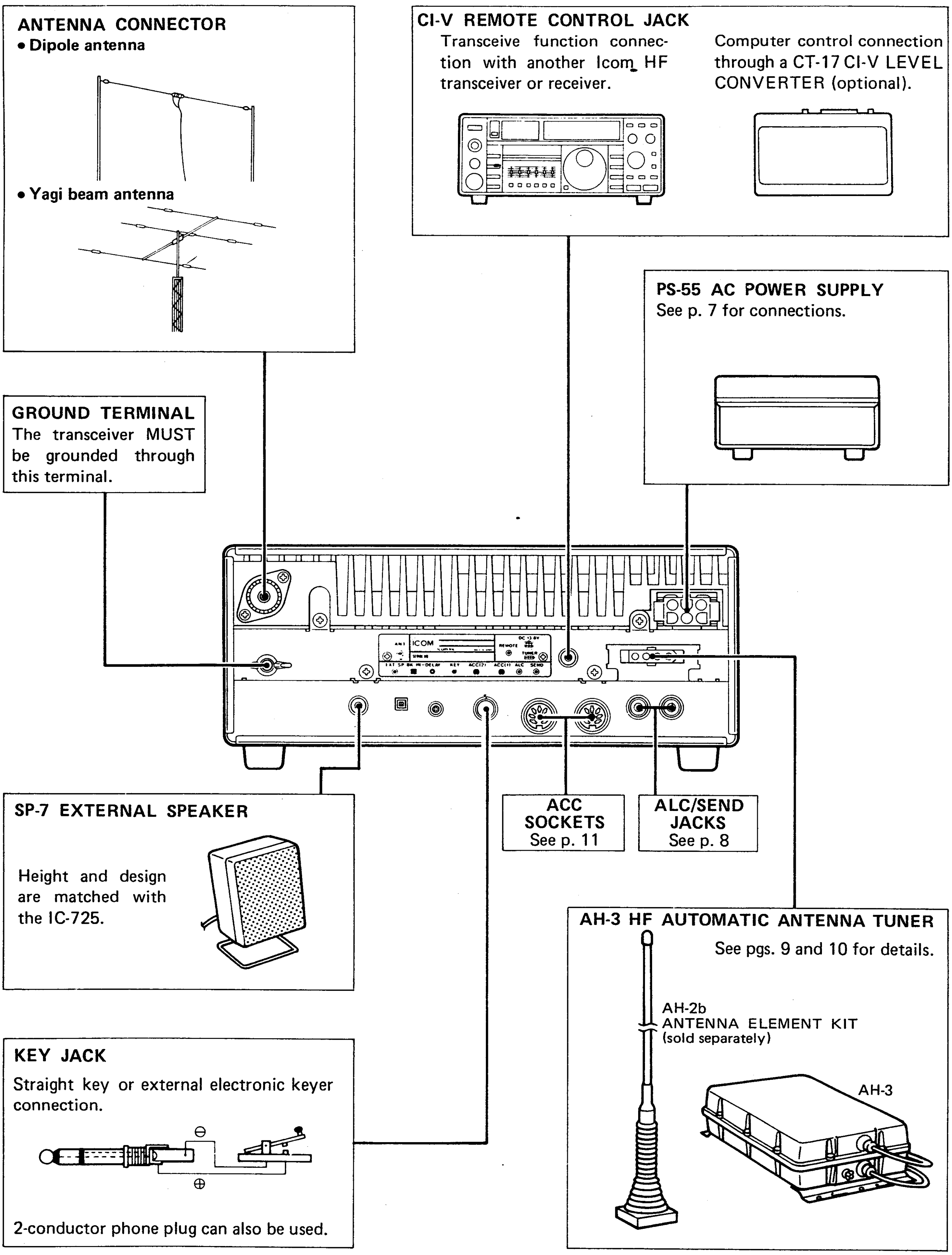
2) Strip the cable as shown in the diagram, and soft solder the center conductor.

3) Slide the connector body onto the cable and solder.

4) Screw the coupling ring onto the connector body.

1 inch = 25.4 mm

2-6 REAR PANEL CONNECTIONS



3 SYSTEM INTERCONNECTIONS

3-1 POWER SUPPLY CONNECTIONS

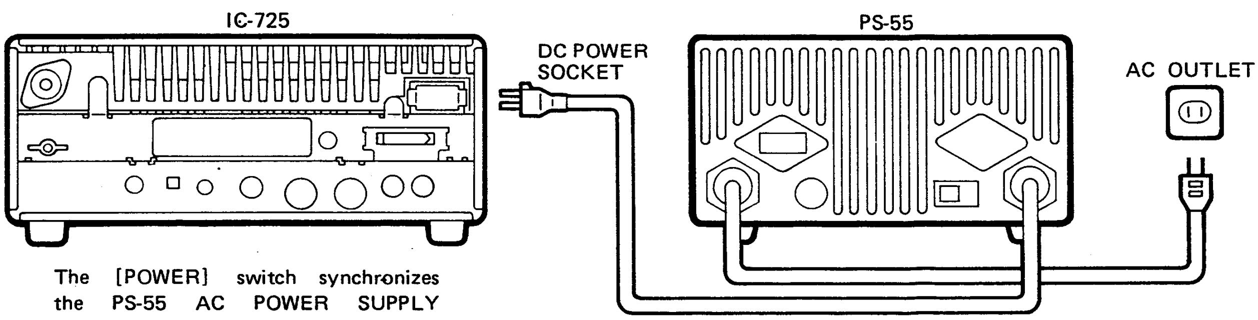
Use the PS-55 AC POWER SUPPLY (sold separately) when operating the IC-725 with AC power. Refer to the diagram below.

The [POWER] switch on the IC-725 front panel synchronizes the PS-55 with the IC-725.

CAUTION: Before connecting the DC power cable, check the following important items. Make sure:

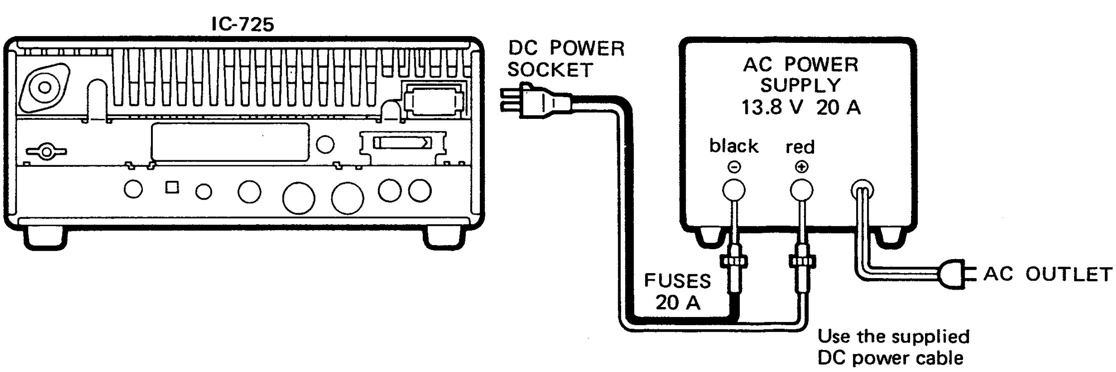
- The [POWER] switch is OFF.
- Output voltage of the power source is 12 ~ 15 V when you want to use a non-Icom power supply.
- DC power cable polarity is correct.
  red → positive (+) terminal
  black → negative (−) terminal

●CONNECTING THE PS-55

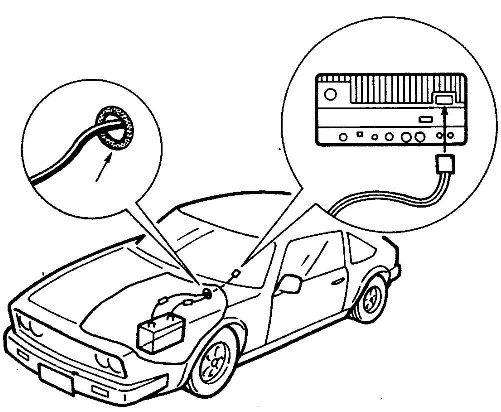


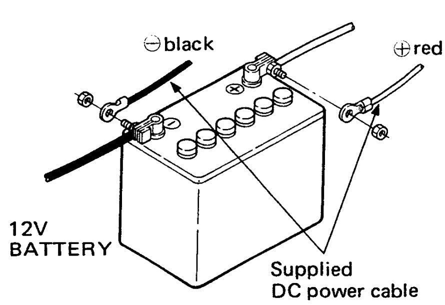
The [POWER] switch synchronizes the PS-55 AC POWER SUPPLY with the IC-725.

●CONNECTING A NON-ICOM AC POWER SUPPLY

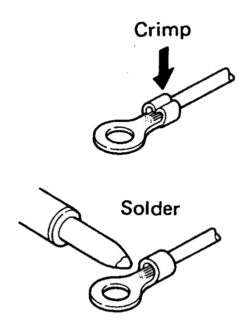


●CONNECTING A VEHICLE BATTERY





NOTE: Use terminals for the cable connections.



3-2 LINEAR AMPLIFIER CONNECTIONS

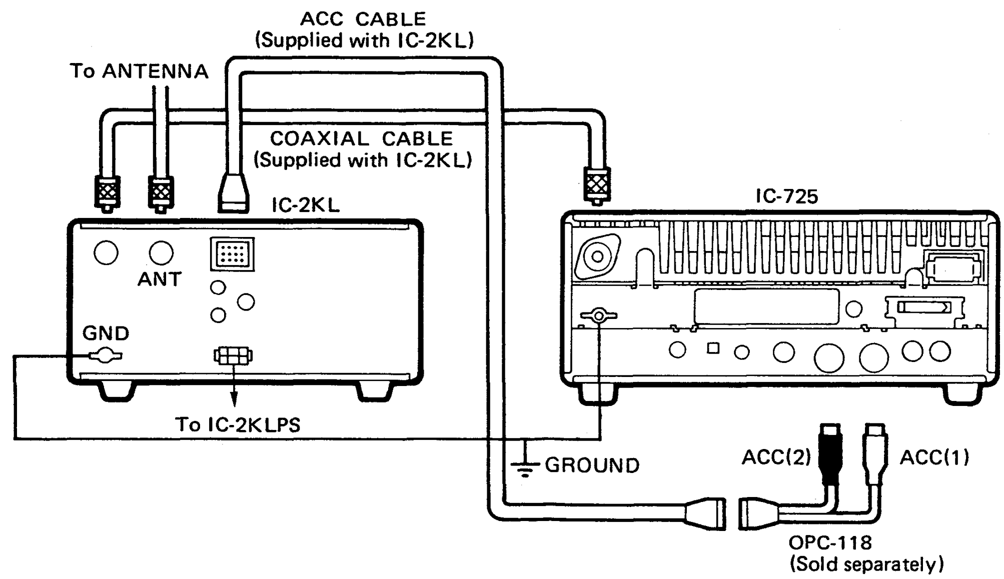
To connect the IC-2KL LINEAR AMPLIFIER or a linear amplifier not made by Icom, refer to the diagram below.

The optional IC-2KL HF LINEAR AMPLIFIER may be easily connected to the IC-725. OPC-118 (sold separately) is necessary.

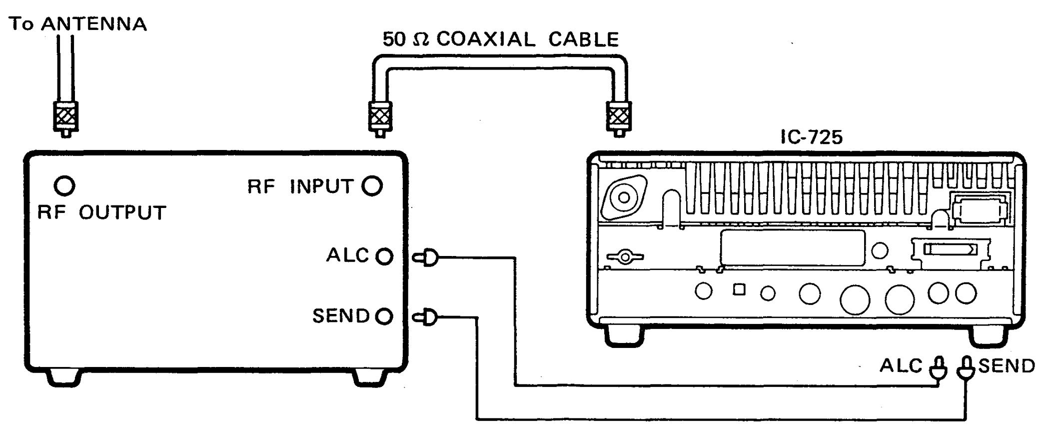
When connecting the transceiver to a non-Icom linear amplifier, connect the cables as shown in the diagram below. The specification for the keying relay is DC 16 V, 2 A maximum.

If the linear amplifier requires greater voltage than the above value, a large relay must be installed between the amplifier and the transceiver.

•CONNECTING THE IC-2KL



•CONNECTING A NON-ICOM LINEAR AMPLIFIER



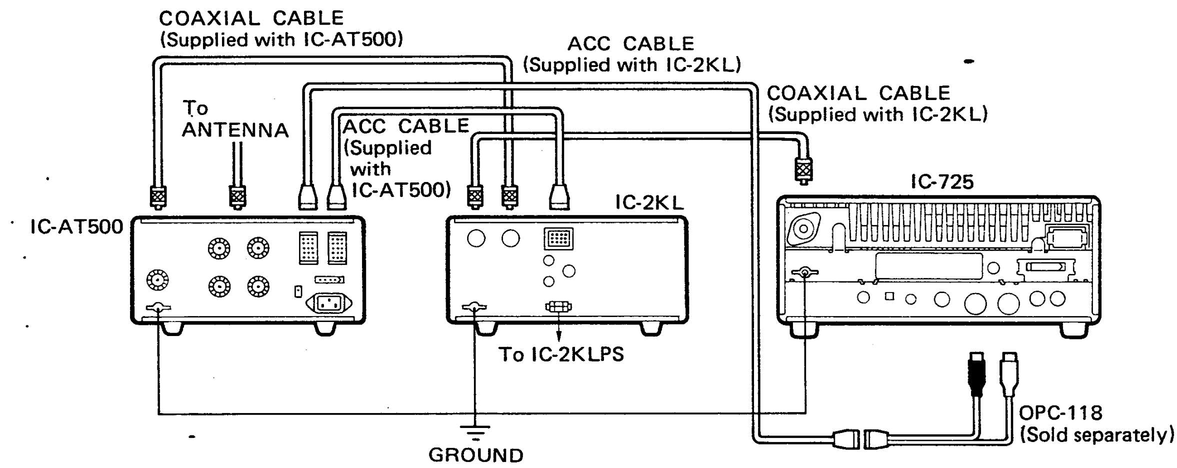
3-3 ANTENNA TUNER CONNECTIONS

It is recommended that an Icom antenna tuner be used between the IC-725 and the antenna system for maximum transceiver performance.

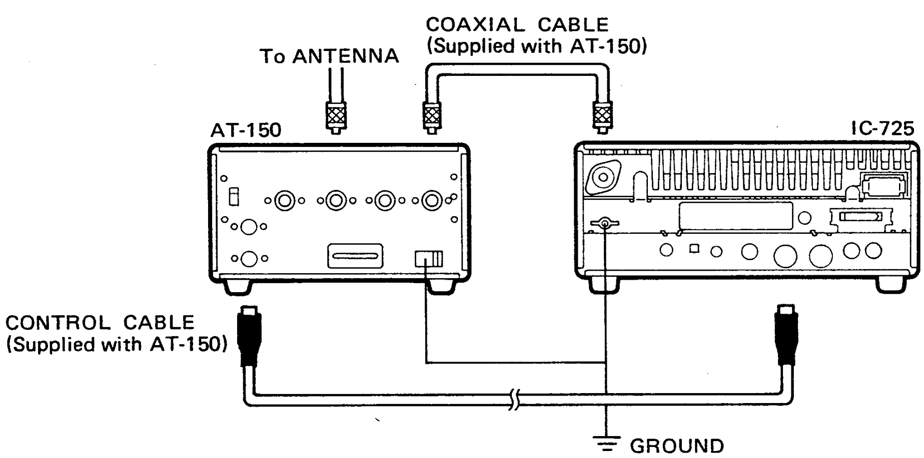
Refer to the instruction manuals of each antenna tuner below for more detailed connecting and operating information.

When connecting the IC-725 to the IC-AT500 or IC-AT100, the optional OPC-118 INTERFACE CABLE is necessary.

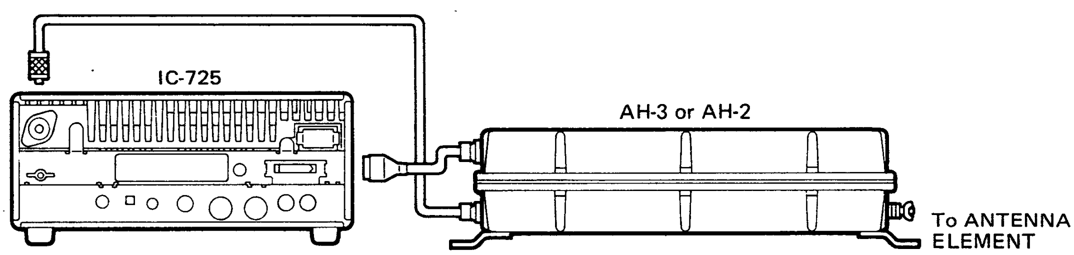
●CONNECTING THE IC-AT500



●CONNECTING THE AT-150



●CONNECTING THE AH-3 OR AH-2



3-4 AH-3 OPERATING PROCEDURES

The AH-3 HF AUTOMATIC ANTENNA TUNER is designed for use with the IC-725. By pushing the [TUNER] switch on the IC-725 front panel, the AH-3 tunes at 50 Ω on 1.8 MHz ~ 30 MHz with a length of 12 m (40 ft) wire.

The AH-2a HF AUTOMATIC ANTENNA TUNER can be used with the IC-725 without the supplied CONTROLLER UNIT.

Following are the simple operation procedures for using the AH-3 HF AUTOMATIC ANTENNA TUNER:

1) Connect cables from the AH-3 and antenna wire as shown in the diagram on p. 9.

2) Turn transceiver power ON.

3) Select the desired band and frequency.

4) Push the [TUNER] switch.
   - "TUNE" flashes on the FUNCTION DISPLAY.
   - The AH-3 automatically tunes at 50 Ω.

5) "TUNE" steadily appears when the AH-3 tunes at 50 Ω.

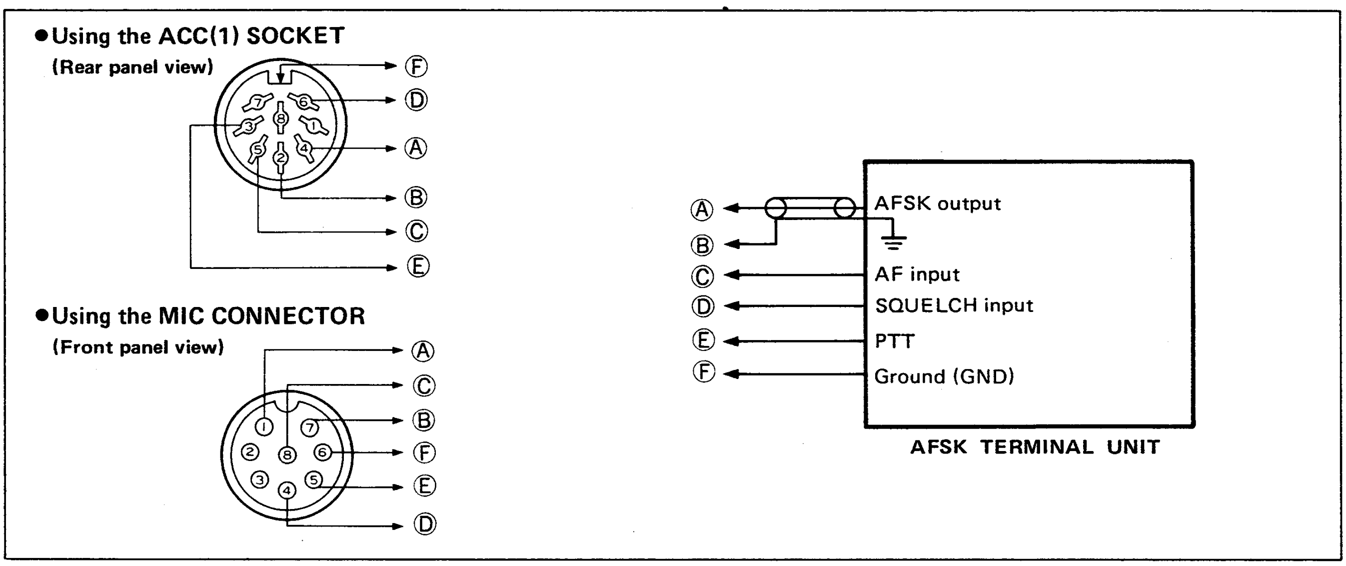
6) "THRU" appears when the AH-3 cannot tune at 50 Ω.
   - When "THRU" appears, the AH-3 is bypassed and the antenna wire is connected to the antenna connector on the IC-725 directly.

7) When you want to bypass the AH-3 manually, push the [FUNC] switch then push the [TUNER] switch.
   - "THRU" appears on the FUNCTION DISPLAY.

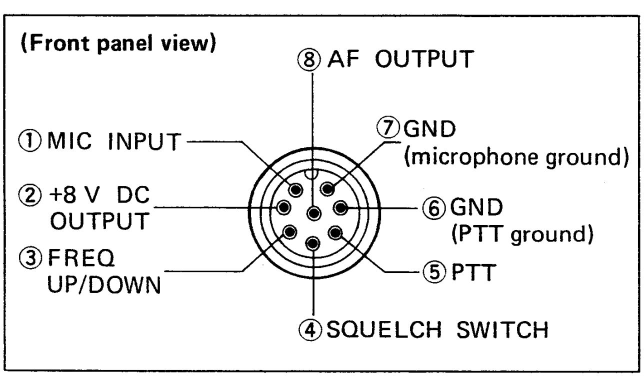
3-5 AFSK TERMINAL UNIT CONNECTION

When operating an AFSK such as RTTY, AMTOR or packet, connect external equipment to the ACC(1) SOCKET on the rear panel or MIC CONNECTOR on the front panel as in the following diagram below.

See p. 11 for ACC(1) and MIC CONNECTOR pin information.



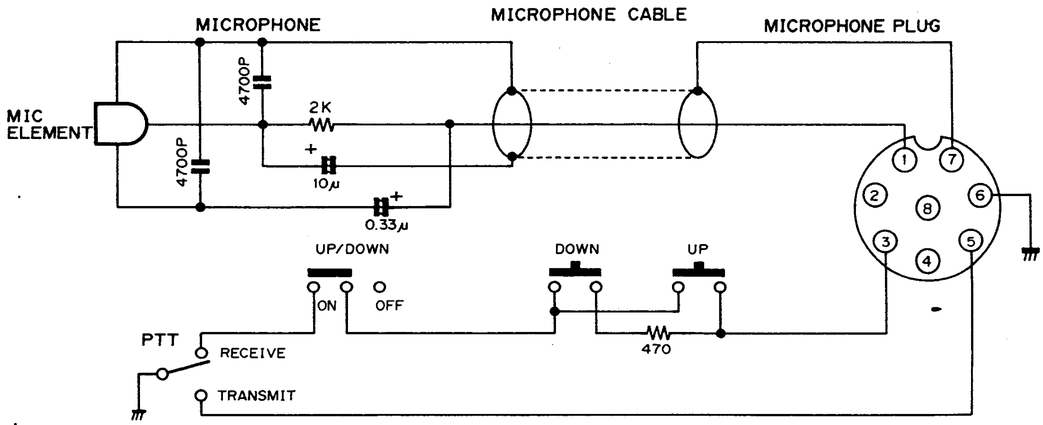
3-6 MIC CONNECTOR INFORMATION



PIN NO.	FUNCTION	DESCRIPTION
2	+8 V DC output	Max. 10 mA
3	Frequency up	Ground
	Frequency down	Ground through 470 Ω
4	Squelch open	"LOW" level
	Squelch closed	"HIGH" level

CAUTION: DO NOT short pin 2 to ground as this can damage the internal 8 V regulator.

●HM-12 SCHEMATIC DIAGRAM



3-7 ACC SOCKET INFORMATION

(1) ACC(1) SOCKET

PIN NO.	PIN NAME	DESCRIPTION	SPECIFICATIONS
1	NC	No connection.	-----
2	GND	Connects to ground.	Connected in parallel with ACC(2) pin 2.
3	SEND	Input/output pin. Goes to ground when transmitting. When grounded, transmits.	Ground level : –0.5 ~ 0.8 V Input current : less than 20 mA Connected in parallel with ACC(2) pin 3.
4	MOD	Modulator input. Connects to a modulator.	Input impedance : 10 kΩ Input level : Approx. 100 mV rms
5	AF	AF detector output. Fixed, regardless of [AF] position.	Output impedance : 4.7 kΩ Output level : 100 ~ 300 mV rms
6	SQLS	Squelch output. Goes to ground when squelch opens.	SQL open : Less than 0.3 V/5 mA SQL closed : More than 6.0 V/100 μA
7	13.8 V	13.8 V output when power is ON.	Output current : Max. 1 A Connected in parallel with ACC(2) pin 7.
8	ALC	ALC voltage input.	Control voltage : –4 ~ 0 V Input impedance : More than 10 kΩ Connected in parallel with ACC(2) pin 5.

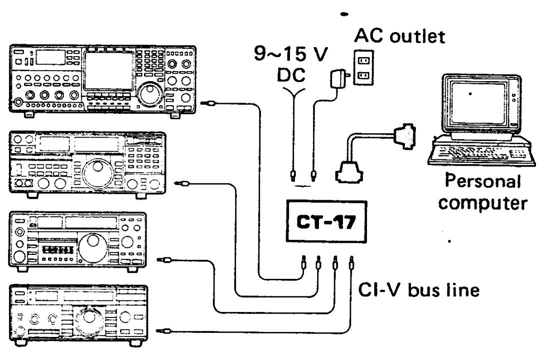
(2) ACC(2) SOCKET

PIN NO.	PIN NAME	DESCRIPTION	SPECIFICATIONS
1	8 V	Regulated 8 V output.	Output voltage : 8 V ± 0.3 V Output current : Less than 10 mA
2	GND	Same as ACC(1) pin 2.	
3	SEND	Same as ACC(1) pin 3.	
4	BAND	Band voltage output. (Varies with amateur band)	Output voltage : 0 ~ 8.0 V
5	ALC	Same as ACC(1) pin 8.	
6	NC	No connection.	-----
7	13.8 V	Same as ACC(1) pin 7.	

3-8 REMOTE JACK (CI-V) INFORMATION

The IC-725 can be connected through a CT-17 CI-V LEVEL CONVERTER (optional) to a personal computer equipped with an RS-232C port. Icom Communication Interface - V (CI-V) controls frequency, mode, memory channels, etc.

•CT-17 CONNECTION
Up to four Icom CI-V transceivers can be connected to a personal computer equipped with as RS-232C port.



(1) CI-V CONDITION

Transmitters and receivers using the Icom CI-V System exchange serial information in the packet format. The contents of a data packet can be changed by diodes D2 ~ D4, D57 ~ D63 and D64 on the MAIN UNIT. See diagram at right below for the location of these diodes.

•Baud rate
Baud rate is the data transfer rate. The standard Icom CI-V baud rate is 1200 bps.

BAUD RATE (bps)	DIODE	
	D2	D3
9600	Insert diode	-----
1200	-----	Insert diode
300	Insert diode	Insert diode

☐ : Default

•Frequency data
When connecting the transceiver with the IC-735, change the value to 4 bytes.

FREQUENCY DATA	DIODE (D4)
4 bytes	No diode (Cut D4)
5 bytes	Insert diode

☐ : Default

•Address
You can set an independent address for your IC-725. The IC-725 has the address of 28H (40) as a default value.

Figures marked with an H are hexidecimals and bracketed figures ( ) are decimals.

DIODE						
D57 (1)	D58 (2)	D59 (4)	D60 (8)	D61 (16)	D62 (32)	D63 (64)
---	---	---	Insert diode	---	Insert diode	---

☐ : Default 28H (40)

•Transceive
Transceive operation is possible using the IC-725 with another transceiver such as the IC-781. Either transceiver can be used as the transmitter or receiver.

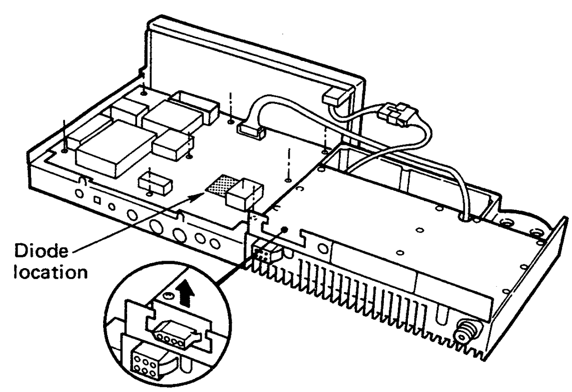
TRANSCEIVE	DIODE (D64)
ON	Insert diode
OFF	No diode (Cut D64)

☐ : Default

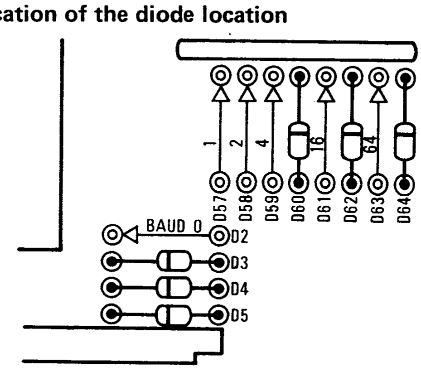
(2) DIODE LOCATION

Diodes are located on the PLL UNIT as shown in the diagram below.

See p. 24 for transceiver disassembly information.



•Magnification of the diode location



Front panel side

4 PRE-OPERATION

4-1 INITIAL SETTINGS

> **NOTE:** Follow all instructions in Section 3 before operating the transceiver.

Turn the [POWER] switch OFF before connecting the DC power cable to the DC power socket on the rear panel.

Set switches and controls as shown in the table below.

SWITCH	POSITION	SWITCH	POSITION
POWER	OUT	LOCK	OUT
TRANSMIT	OUT	AF	CCW
NB	OUT	SQL	CCW
ATT	OUT	MIC	CENTER
PRE	OUT	RF PWR	CW
AGC	OUT		

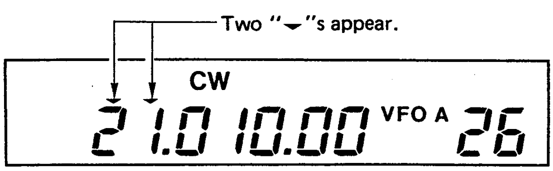
CW: Clockwise CCW: Counterclockwise

4-2 FREQUENCY SELECTION

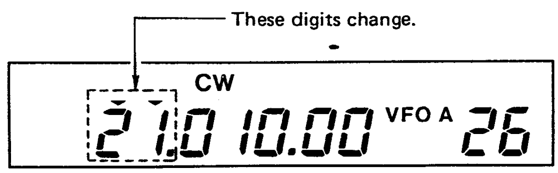
(1) BAND SELECTION

The IC-725 covers all HF amateur bands from 1.9 MHz ~ 28 MHz for transmitting and has receive capability from 500 kHz ~ 30 MHz. The IC-725 has a convenient band stacking register function (see below).

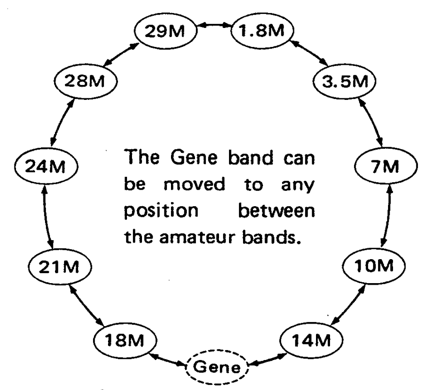
1) Push the [BAND] switch.
   - Two "⌄" appear above the digits that can be changed.



2) Rotate the MAIN DIAL to select the desired amateur band.
   - To select the desired operating frequency, see (2) OPERATING FREQUENCY SELECTION on the next page.
   - Band changes occur as shown in the following diagram.

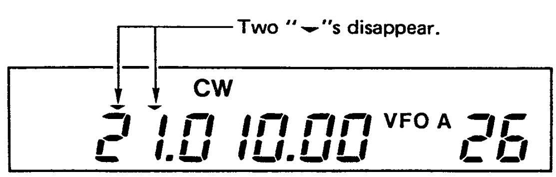


●BAND STACKING REGISTER SIMULATION



> **GENERAL COVERAGE NOTE:**
> As shown in the diagram above, the general coverage band (Gene) can be used between any amateur band. The transceiver memorizes the previously used frequency in the band stacking register cycle.

3) Push the [BAND] switch again to cancel the [BAND] switch function.



Tech Talk from Icom

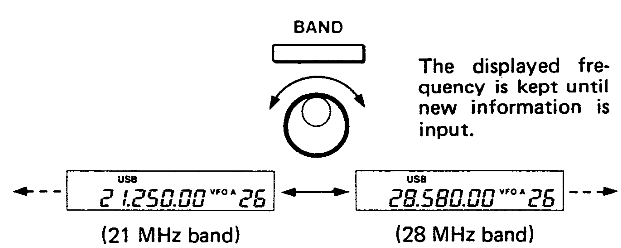
Q. What is the function of the band stacking register?

A. The band stacking register stores operating frequencies in VFO modes, switches bands, and returns the transceiver to stored frequencies.

This is especially convenient when switching bands during contests and for quick monitoring of propagation conditions on other bands.

●BAND STACKING REGISTER EXAMPLE

Each band stores the last used frequency and mode.

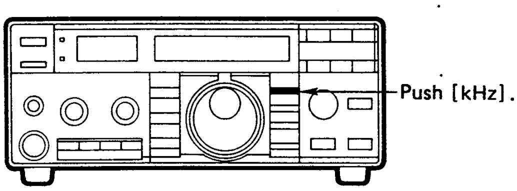


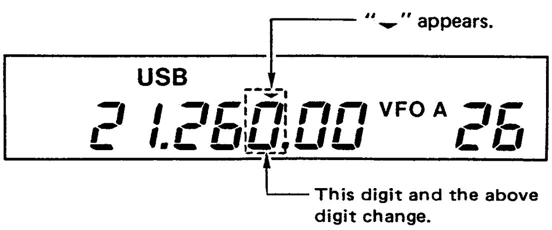
(2) OPERATING FREQUENCY SELECTION

1) To select the desired operating band, see (1) BAND SELECTION on the previous page.

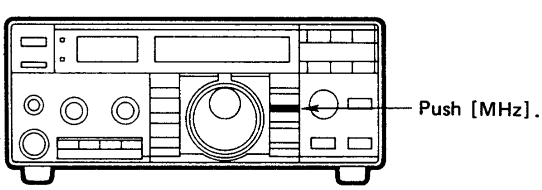
2) Rotate the MAIN DIAL to set the desired operating frequency.
   - The frequency changes in 10 Hz steps.
   - To change the frequency either in 20 Hz or 50 Hz steps, see (3) CHANGING THE FREQUENCY STEP.
   - To change the frequency quickly, see step 3.
   - Faster MAIN DIAL rotation automatically shifts the tuning increment by 10 kHz per full rotation.

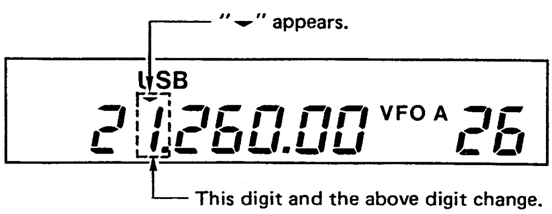
- When the [kHz] switch is pushed, "⌄" appears above the kHz digit. Rotating the MAIN DIAL changes the kHz digit.





- When the [MHz] switch is pushed, "⌄" appears above the MHz digit. Rotating the MAIN DIAL changes the MHz digit.



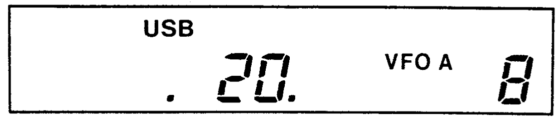


(3) CHANGING THE FREQUENCY STEP

The IC-725 has been set at 10 Hz frequency steps at the factory. However, the frequency step can be changed to 20 Hz or 50 Hz as follows:

1) Push the [FUNC] switch.

2) Push and hold the [kHz] switch, then rotate the MAIN DIAL.
   - The FUNCTION DISPLAY shows frequency steps for 10 Hz, 20 Hz and 50 Hz sequentially.



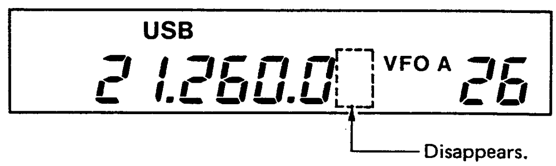
3) Select the desired frequency step and release the [kHz] switch.

(4) TURNING ON AND OFF THE 10 Hz DIGIT

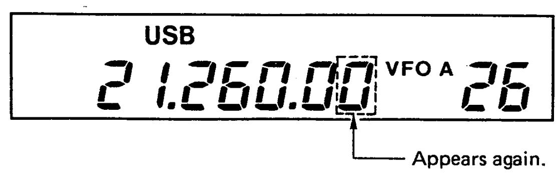
The 10 Hz digit can be turned ON and OFF. The frequency changes in the set frequency step even if the digit is turned OFF.

1) Push the [FUNC] switch.

2) Push the [BAND] switch.
   - The 10 Hz digit disappears.



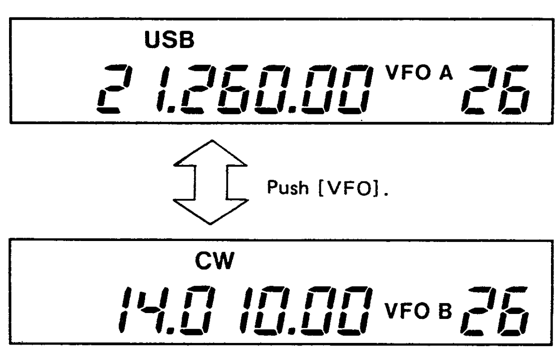
3) Push the [FUNC] switch then push the [BAND] switch to turn ON the 10 Hz digit.
   - The 10 Hz digit appears again.



4-3 VFO A AND VFO B SELECTION

The IC-725 contains two VFOs which both receive and transmit. The VFOs are called VFO A and VFO B. This dual VFO system provides tremendous operating flexibility.

Push the [VFO] switch to select VFO A or VFO B.



4-4 RECEIVER CONTROLS AND SWITCHES

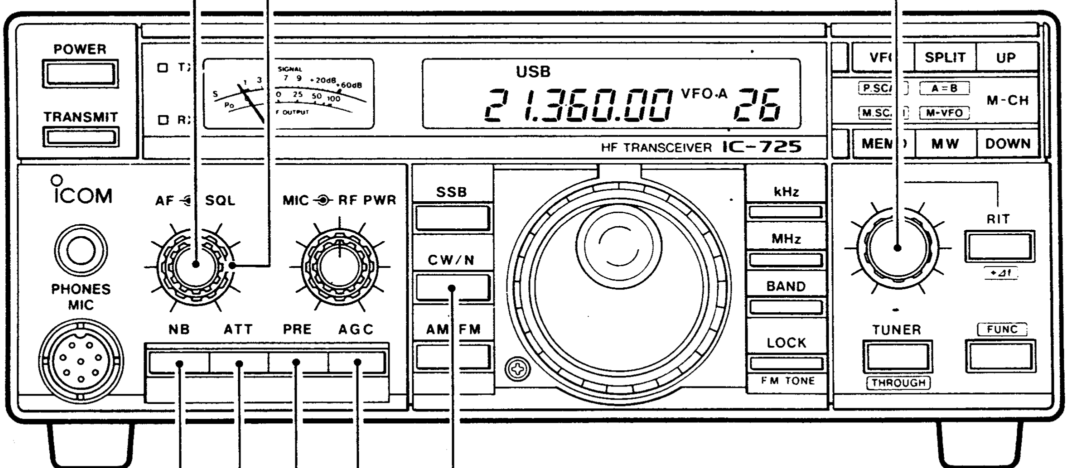
Adjust the following controls and switches on the front panel for optimum reception.

SQUELCH CONTROL
Mutes the speaker. Signals and noises that are stronger than the squelch threshold level open the squelch and audio is emitted from the speaker.

AF GAIN CONTROL
Varies the audio output level from the speaker. Clockwise rotation increases the volume.

RIT CONTROL
Used for fine tuning stations which call off frequency or for compensating for frequency drift.

Shifts the receive frequency up to ±1 kHz from the displayed frequency without shifting the transmit frequency.



CW/N SWITCH
By installing an optional CW narrow filter. The transceiver has better receive selectivity in CW mode.

AGC SWITCH
Out position: AGC slow
Normally used when operating in SSB or AM mode.
In position: AGC fast
Normally used when operating in CW mode.

Note that the AGC switch does not function in FM mode.

PREAMP SWITCH
Used when receiving weak signals. Push [PREAMP] to the IN position to improve the S/N ratio and sensitivity. Especially useful during DX operation.

ATTENUATOR SWITCH
Used when the received sound from the speaker is distorted by very strong signals. Push [ATT] to the IN position to activate the 20 dB attenuator.

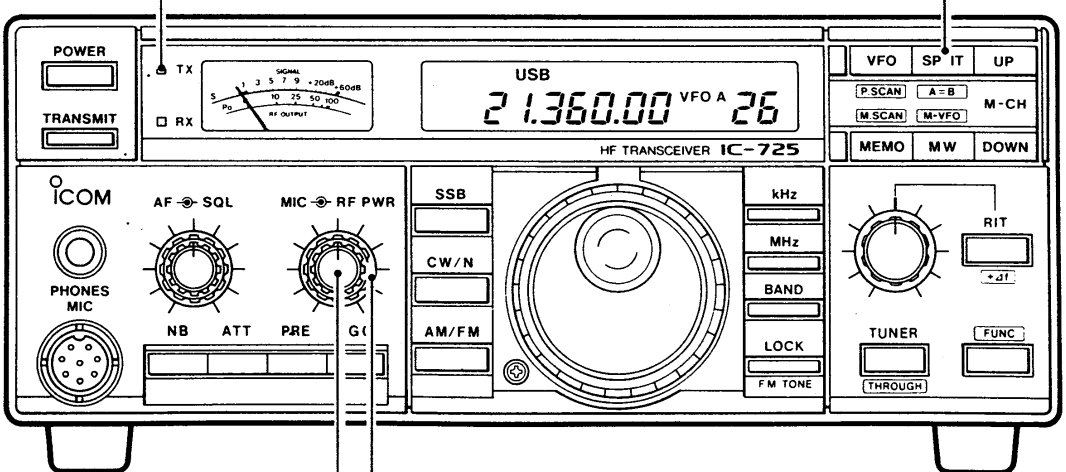
NOISE BLANKER SWITCH
Reduces pulse-type noise such as that generated by automobile ignition systems.

Note that the noise blanker function does not function in AM and FM modes and may not work well when strong signals are on nearby frequencies or when noise is continuous rather than pulse-type.

4-5 TRANSMITTER CONTROLS AND SWITCH

TRANSMIT/ALC INDICATOR
Lights up when transmitting. Lighting intensity depends on the mic gain and your voice level. See MIC GAIN control information below.

SPLIT SWITCH
For transmitting on one frequency and receiving on another. See detailed information on p. 21.



RF POWER CONTROL
Varies the RF output power from 10 W to maximum. Adjust this control for the desired output power level.
Maximum output power
- SSB : 100 W PEP
- CW, FM : 100 W
- AM : 40 W

(AM and FM operations require the optional UI-7 AM • FM UNIT.)

MIC GAIN
Used for adjusting the mic gain. Adjust this control to the point where the ALC indicator lights up at its brightest level while speaking into the mic using your normal voice level. See ALC INDICATOR information above.

Tech Talk from Icom

Q: What is ALC?

A: ALC means Automatic Level Control. The ALC circuit limits output power by controlling the input level of the RF power amplifier.

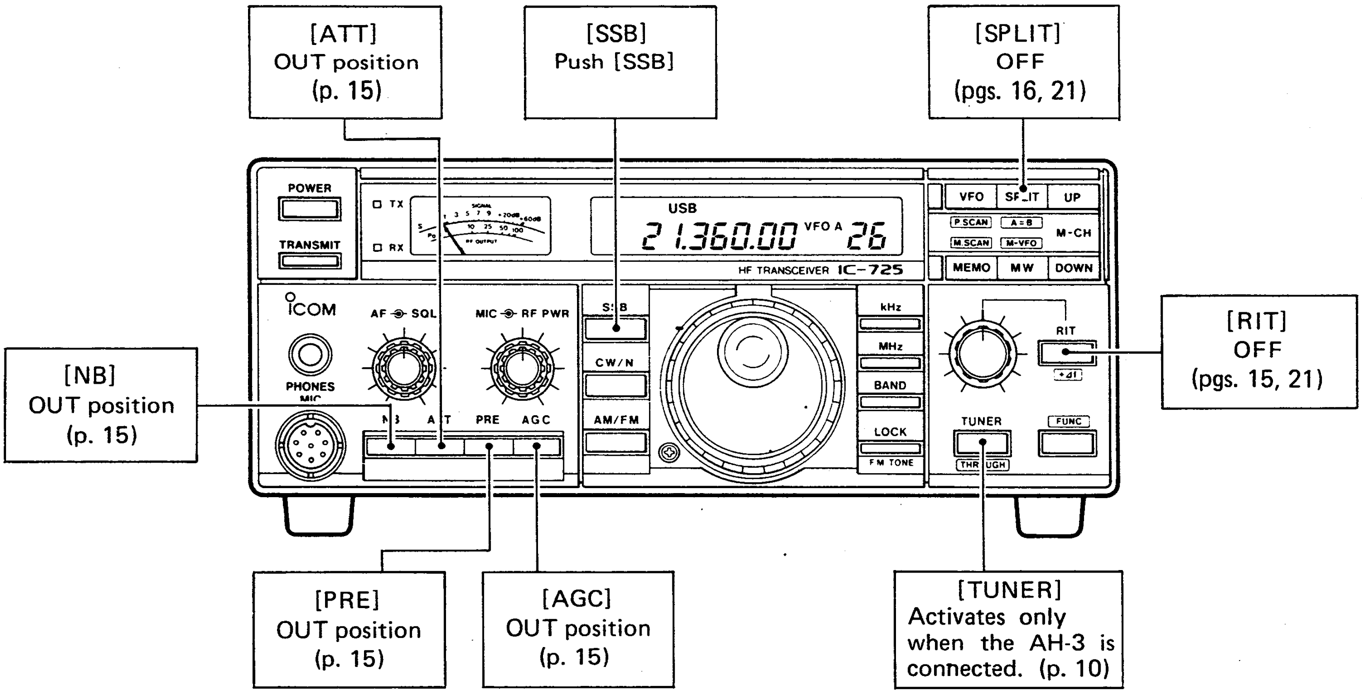
The RF power amplifier is designed as a linear amplifier to amplify an input signal proportionally. The linear amplifier functions in the linear area of the signal. However, if the input signal level exceeds the limit of linearity, the linear amplifier outputs distorted signals because the signal is amplified in a non-linear area of the signal.

To prevent transmitting distorted signals, the ALC circuit detects a signal and applies it to a driver amplifier as feedback to reduce driver output power.

Therefore, the input signal level to the RF power amplifier is reduced and the transceiver transmits clear signals.

5 BASIC OPERATION

5-1 SSB OPERATION



(1) SSB RECEIVING

1) Set controls and switches as described on p. 13.

2) Push [POWER] IN to activate the transceiver.

3) Select the desired operating band. (See p. 13)

4) Push [SSB].
   - USB is automatically selected on bands above 7 MHz. LSB is automatically selected on bands below 10 MHz.
   - Push [SSB] again to select the opposite side of the side band.

5) Adjust [AF] as desired. (See p. 15)

6) Adjust [SQL], if needed. (See p. 15)

7) Rotate the MAIN DIAL to receive a signal.

8) Use the controls and switches described on p. 15 for better receiving.

(2) SSB TRANSMITTING

NOTE: Listen before you transmit to prevent interference.

1) Push the PTT switch on the microphone or push [TRANSMIT] IN to transmit.

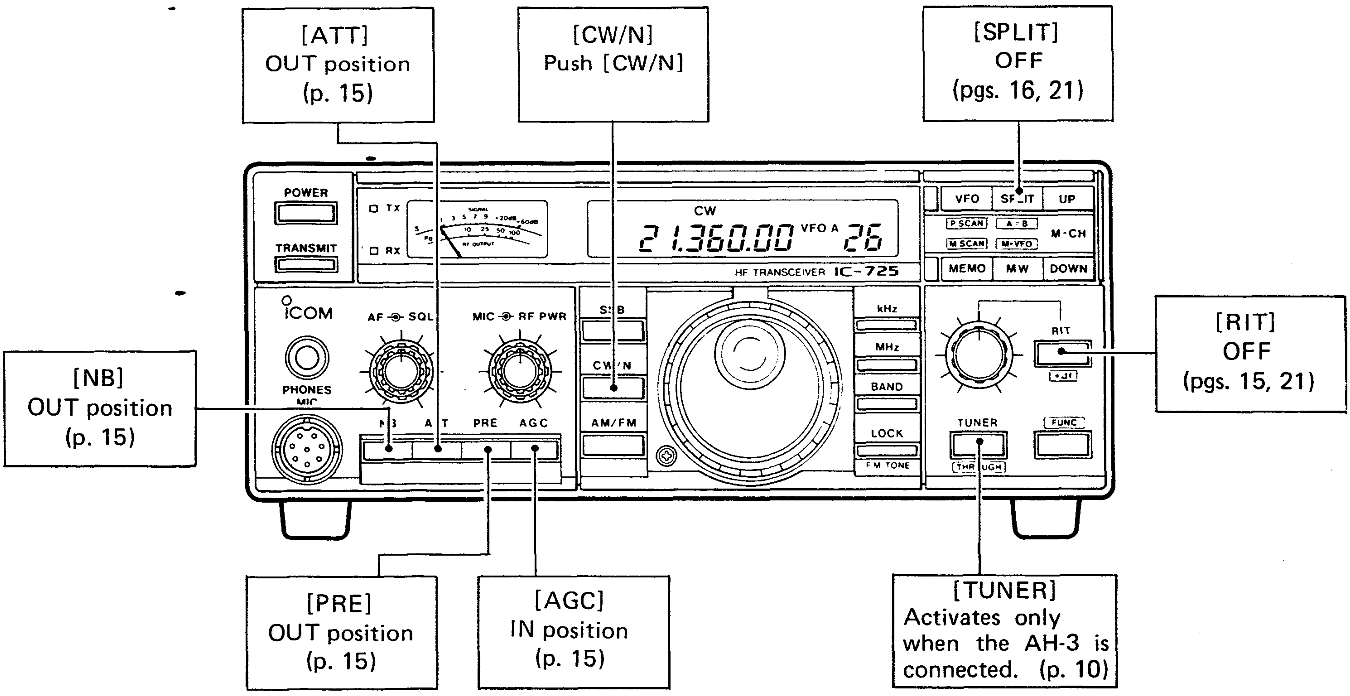
2) Speak naturally into the microphone.
   - When you transmit a signal, the meter needle moves.

3) Adjust [RF POWER] to the desired output power. (See p. 16)

4) Adjust [MIC], if needed. (See p. 16)

5) Release the PTT switch to return to receiving.

5-2 CW OPERATION



(1) CW RECEIVING

1) Set controls and switches as described on p. 13.

2) Push [POWER] IN to activate the transceiver.

3) Select the desired operating band. (See p. 13)

4) Push [CW].
   - Push [CW] again to select the CW narrow mode. Operating in CW narrow mode requires an optional CW narrow filter. (See p. 36)

5) Adjust [AF] as desired. (See p. 15)

6) Adjust [SQL], if needed. (See p. 15)

7) Push [AGC] IN to select the AGC fast condition. (See p. 15)

8) Rotate the MAIN DIAL to receive a signal.

9) Use the controls and switches described on p. 15 for better receiving.

(2) CW TRANSMITTING

Plug a straight key or electric keyer into the [KEY] jack on the rear panel.

NOTE: Listen before you transmit to prevent interference.

●NORMAL CW OPERATION

1) Make sure the [BK IN] switch on the rear panel is in the OUT position.

2) Push IN [TRANSMIT] to transmit.

3) Operate the CW key.

4) Adjust [RF POWER] to the desired output power level.

5) Push OUT [TRANSMIT] to return to receive.

●CW BREAK-IN OPERATION

1) Push IN the [BK IN] switch on the rear panel.

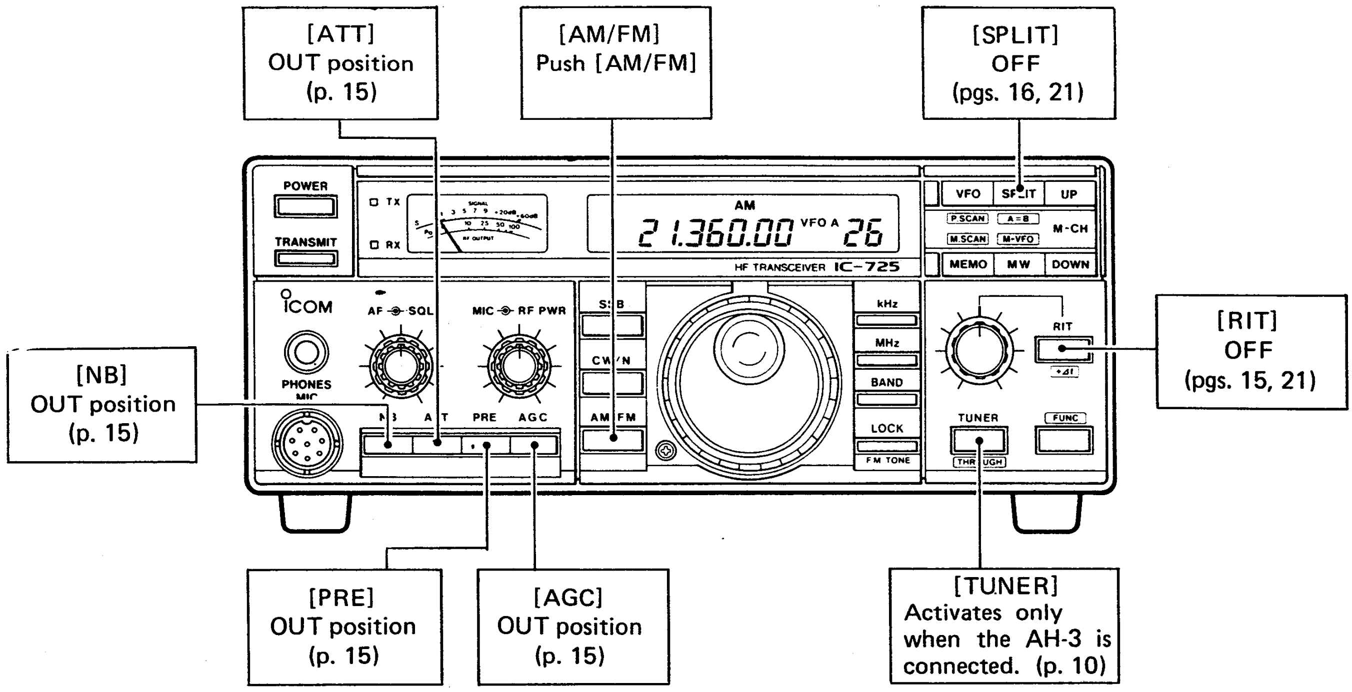
2) Operate the CW key.

3) Adjust [DELAY] control on the rear panel.
   - Clockwise rotation increases the transmit release delay time.

4) Adjust [RF POWER] to the desired output power level.

5) Transmit/receive switching is automatic.

5-3 AM OPERATION



(1) AM RECEIVING

1) Set controls and switches as described on p. 13.
2) Push [POWER] IN to activate the transceiver.
3) Select the desired operating band. (See p. 13)
4) Push [AM/FM] to select AM mode.
5) Adjust [AF] control as desired. (See p. 15)
6) Adjust [SQL], if needed. (See p. 15)
7) Rotate the MAIN DIAL to receive a signal.
8) Use the controls and switches described on p. 15 for better receiving.

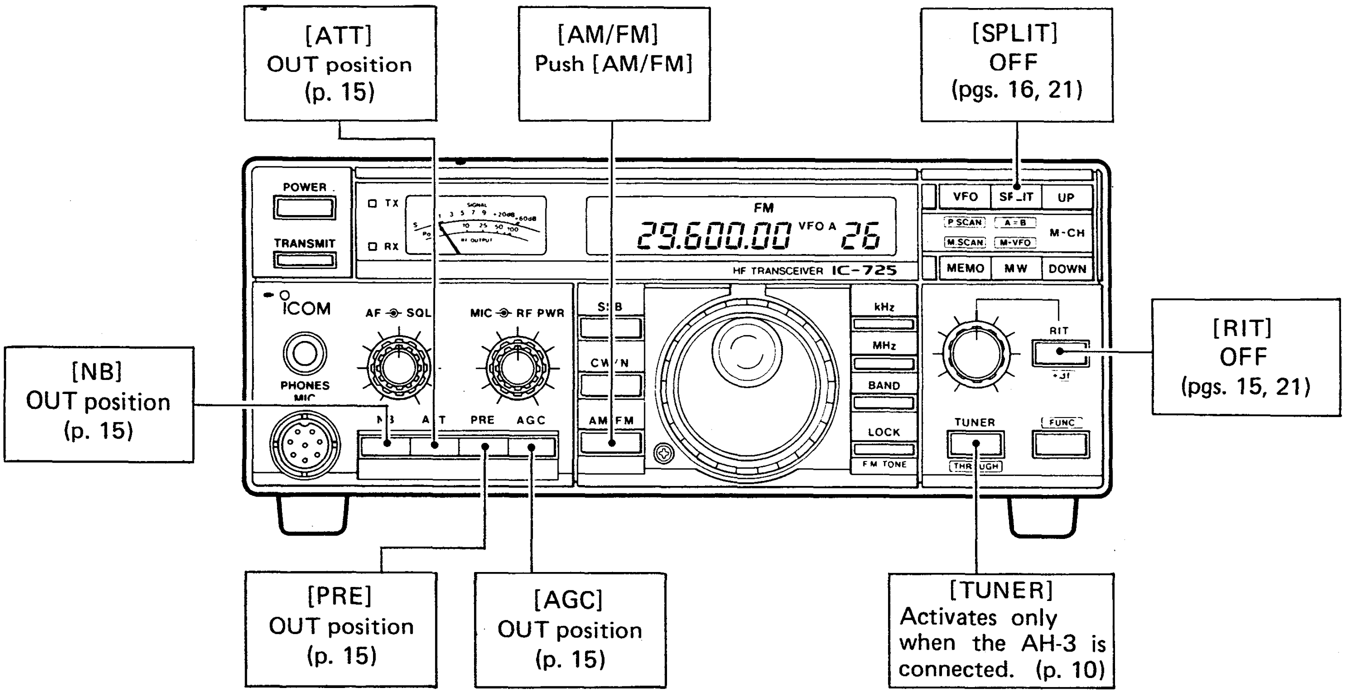
(2) AM TRANSMITTING

Operating with AM transmission requires the optional UI-7 AM • FM UNIT. See p. 29 when installing the unit.

NOTE: Listen before you transmit to prevent interference.

1) Push the PTT switch on the microphone or push [TRANSMIT] IN to transmit.
2) Speak naturally into the microphone.
   - When you transmit a signal, the meter needle indicates a point and moves slightly according to your voice level.
3) Adjust [RF POWER] to the desired output power level.
   - AM output power : 10 ~ 40 W
4) Set [MIC] to the center position.
   - To increase the microphone gain, rotate [MIC] clockwise.
5) Release the PTT switch to return to receiving.

5-4 FM OPERATION



The optional UI-7 AM • FM UNIT is required for FM receiving and transmitting. See p. 29 when installing the unit.

(1) FM RECEIVING

1) Set controls and switches as described on p. 13.

2) Push [POWER] IN to activate the transceiver.

3) Select the desired operating band. (See p. 13)

4) Push [AM/FM] to select FM mode.

5) Adjust [AF] as desired. (See p. 15)

6) Adjust [SQL], if needed. (See p. 15)

7) Rotate the MAIN DIAL to receive a signal.

8) Use the controls and switches described on p. 15 for better reception.

(2) FM TRANSMITTING

NOTE: Listen before you transmit to prevent interference.

1) Push the PTT switch on the microphone or push [TRANSMIT] IN to transmit.

2) Speak naturally into the microphone.
   - When you transmit a signal, the meter needle indicates a point and moves slightly according to your voice level.

3) Adjust [RF POWER] to the desired output power level.

4) Set [MIC] to the center position.
   - To increase the mic gain, rotate [MIC] clockwise.

5) Release the PTT switch to return to receiving.

•SUBAUDIBLE TONE TRANSMITTING

A subaudible tone is often required to access HF FM repeaters. The optional UI-7 AM • FM UNIT is required to transmit the subaudible tone. See p. 29 when installing the unit.

1) Push the PTT switch on the microphone or push [TRANSMIT] IN to transmit.

2) Push [LOCK] IN to transmit tone signals.

3) Push [LOCK] OUT to stop transmitting tone signals.

5-5 RIT/Δf FUNCTION

By using the RIT function, it is possible to shift the receive frequency up to ±1 kHz on 10 Hz steps without moving the transmit frequency. This is useful for fine tuning stations which transmit using off frequency or for compensating for frequency drift.

The IC-725 has an added feature: the RIT shift frequency can be added to the displayed frequency.

1) Push the [RIT] switch to activate the RIT function.
   - "RIT" appears on the FUNCTION DISPLAY.

2) Rotate the RIT control.
   - Clockwise rotation : Increases frequency
   - Counterclockwise rotation : Decreases frequency

3) To add the RIT shift frequency to the displayed frequency, push the [FUNC] switch then push the [RIT] switch.
   - The displayed frequency changes.
   - "RIT" disappears.

4) To clear the RIT shift frequency, push the [RIT] switch.
   - "RIT" disappears.

5-6 SPLIT OPERATION

Split operation allows you to transmit and receive on two different frequencies.

The IC-725 provides split operation using either of the following two methods:
(1) Using the contents of VFO A and VFO B in VFO mode.
(2) Using memory channel 23 or 24 in MEMORY mode.

(1) USING VFO A AND B MODES

Split operation is possible using the contents of VFO A and VFO B in VFO mode.

Following is an example for 21.2500 MHz / USB for receiving and 21.3600 MHz / USB for transmitting using split operation.

VFO A : Displayed frequency for receiving

USB
21.250.00 VFO A 26

VFO B : Transmit frequency

USB
21.360.00 VFO B 26

1) Set the frequency and mode for 21.2500 MHz and USB in VFO A mode.

2) Set the frequency and mode for 21.3600 MHz and USB in VFO B mode.

3) Push the [VFO] switch to select VFO A mode.

4) Push the [SPLIT] switch.

5) Push either the PTT or [TRANSMIT] switch to transmit.
   - You are transmitting on 21.3600 MHz in USB mode and receiving on 21.2500 MHz in USB mode.

6) To change the transmit and receive frequencies in the split operation, push the [VFO] switch to select the VFO B indicated.

(2) USING MEMORY CHANNEL 23 OR 24

Memory channels 23 and 24 can memorize both transmit and receive frequencies. This is useful for selecting the most often used split frequencies.

Following is an example for 21.2500 MHz / USB for receiving and 21.3600 MHz / USB for transmitting using split operation.

● How to memorize split frequencies into memory channel 23

1) Select VFO A mode and push the [UP] or [DOWN] switch to select memory channel 23.

2) Push the [SPLIT] switch.
   - "SPLIT" appears.

3) Set the frequency and mode to 21.2500 MHz and USB and push the [MW] switch to memorize the information.

4) Push the [VFO] switch to select VFO B mode.

5) Set the frequency and mode to 21.3600 MHz and USB, and push the [MW] switch to memorize the information.

● How to operate the split frequencies

1) Push the [MEMO] switch to select MEMORY mode and push the [UP] or [DOWN] switch to select memory channel 23.

2) Push the [SPLIT] SWITCH.
   - "SPLIT" appears.

3) Push either the PTT or [TRANSMIT] switch to transmit.
   - You are transmitting on 21.3600 MHz in USB mode and receiving on 21.2500 MHz in USB mode.

4) To reverse the transmit and receive frequencies, follow the steps above for memorizing frequencies, reversing the VFOs.

The IC-725 has 26 memory channels. The memory function is very useful for quickly changing to a desired frequency.

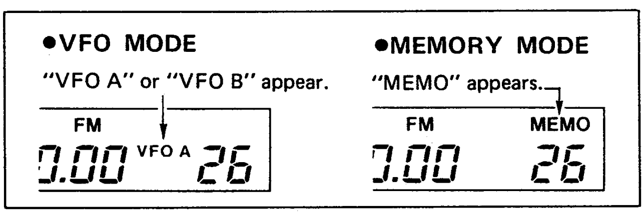
Memory channels 0 ~ 26 can be programmed with one frequency and one mode in each memory channel. Memory channels 23 ~ 26 also have the following special memory functions:

MEMORY CHANNEL NUMBER	CAPABILITY
0 ~ 22	One frequency and one mode in each memory channel.
23 and 24	Independent transmit and receive frequencies and mode on each channel for split operation.
25 and 26	One frequency and one mode on each memory channel as scan edges of Programmed Scan.

6-1 VFO AND MEMORY MODE SELECTION

1) Push the [MEMO] switch to select MEMORY mode.

2) Push the [VFO] switch to move to VFO mode.



6-2 MEMORY CHANNEL SELECTION

1) Push the [MEMO] switch to select MEMORY mode.

2) Push the [UP] or [DOWN] switch on the front panel, or the [UP] or [DN] switch on the microphone to select the desired memory channel.

NOTE: When the [LOCK] switch is pushed IN, only memory channels with the same operating mode as displayed are selected when the [UP] or [DOWN] switch is pushed.

6-3 MEMORY WRITING

1) Select either VFO or MEMORY mode.

2) Push the [UP] or [DOWN] switch to select the desired memory channel.

3) Set the desired frequency and mode you want to memorize.

4) Push the [MW] switch to memorize the information.

6-4 FREQUENCY TRANSFERRING [M►VFO]

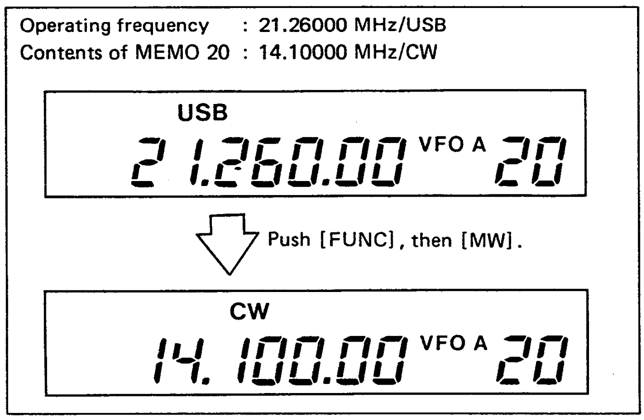
The selected memory contents in a memory channel can be transferred to a VFO mode. This switch operates differently depending on which mode the IC-725 is in.

(1) IN VFO MODE

The frequency and mode stored in the displayed memory channel are transferred to a selected VFO mode.

1) Push the [UP] or [DOWN] switch to select the desired memory channel you want to read.

2) Push the [FUNC] switch then the [MW] switch.
   • Memory contents in the displayed memory channel number appear on the FUNCTION DISPLAY.



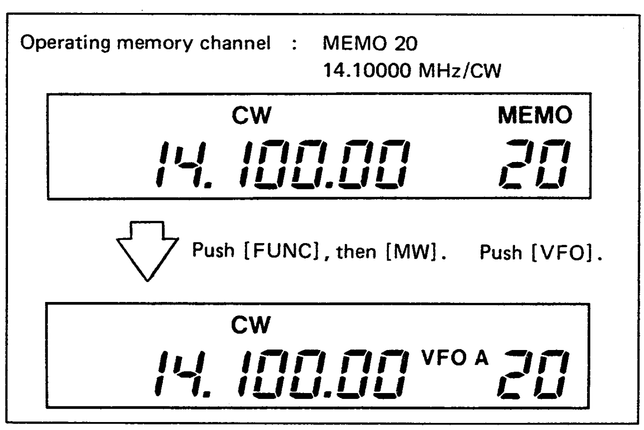
(2) IN MEMORY MODE

The displayed frequency and mode are transferred to the VFO used immediately prior to changing to MEMORY mode.

1) Push the [UP] or [DOWN] switch to select the desired memory channel you want to read.

2) Push the [FUNC] switch then the [MW] switch.
   • The displayed memory contents are transferred.

3) Push the [VFO] switch.
   • The selected memory contents are displayed.



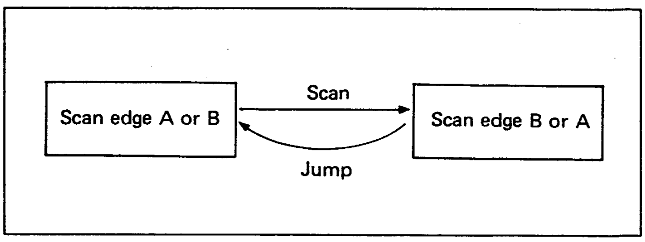
7 SCANNING OPERATION

The IC-725 is equipped with three separate scan functions which provide tremendous scanning versatility at the touch of a few switches.

7-1 SCAN TYPES

SCAN NAME	FUNCTION
PROGRAMMED SCAN	Repeatedly scans between two user-programmed scan edges (MEMO 25 and 26).
MEMORY SCAN	Repeatedly scans all memory channels.
SELECTED MODE MEMORY SCAN	Repeatedly scans memory channels with the same selected operating mode.

7-2 PROGRAMMED SCAN



1) Program the high and low frequency edges of the desired scanning range into MEMO 25 and 26.
   See p. 22 for programming the memory channels.
   - Either channel can have the higher or lower frequency stored.

2) Push the [VFO] switch to select VFO mode.

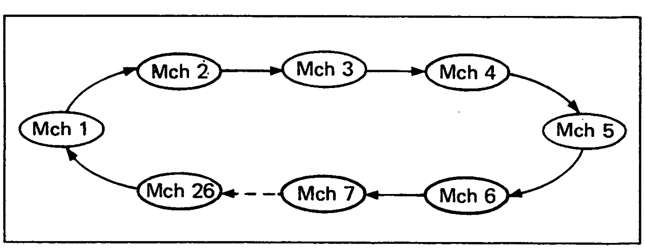
3) Select LSB, USB, CW, AM or FM mode.

4) Adjust the [SQL] control to the threshold point.

5) Push the [FUNC] switch then push the [VFO] switch.
   - The scan begins from the lower limit of the range.
   - The scan stops when a receive signal opens the squelch.
   - The scan resumes after the signal disappears.

6) Push the [VFO] switch again to stop the scan.
   - The following switches and controls also stop the scan: [PTT] [TRANSMIT] [MEMO] [MW] MAIN DIAL

7-3 MEMORY SCAN



1) Program the desired frequencies into memory channels. See p. 22 for programming memory channels.

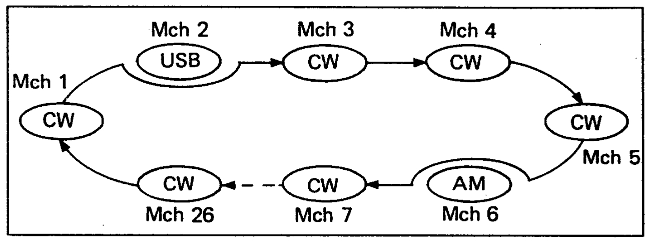
2) Push the [MEMO] switch to select the MEMORY mode.

3) Adjust the [SQL] control to the threshold point.

4) Push the [FUNC] switch then push the [MEMO] switch.
   - The scan begins.
   - The scan stops when a receive signal opens the squelch.
   - The scan resumes after the signal disappears.

5) Push the [MEMO] switch again to stop the scan.
   - The following switches and controls also stop the scan: [PTT] [TRANSMIT] [VFO] [MW] MAIN DIAL

7-4 SELECTED MODE MEMORY SCAN



1) Program the desired frequencies into memory channels. See p. 22 for programming memory channels.

2) Push the [MEMO] switch to select MEMORY mode.

3) Adjust the [SQL] control to the threshold point.

4) Select LSB, USB, CW, AM or FM modes.

5) Push the [LOCK] switch IN.

6) Push the [FUNC] switch then push the [MEMO] switch.
   - The scan begins.
   - The scan stops when a receive signal opens the squelch.
   - The scan resumes after the signal disappears.

7) Push the [MEMO] switch again to stop the scan.
   - The following switches and controls also stop the scan: [PTT] [TRANSMIT] [VFO] [MW] MAIN DIAL

7-5 SUPPLEMENTAL SCAN SETTINGS

(1) SCAN SPEED

Scan speed in the IC-725 is set for fast speed at the factory. See p. 28 for converting to a slower scan speed.

(2) SCAN CLEAR

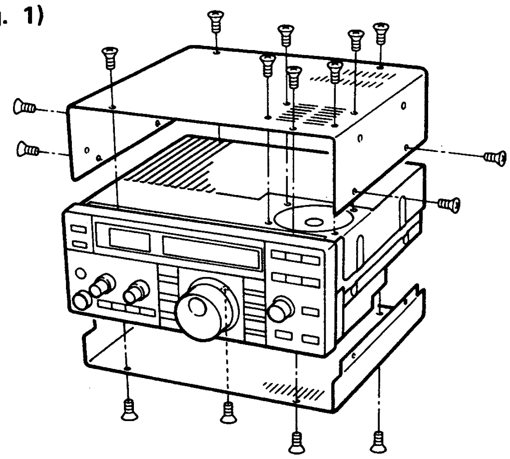
The scan function can be automatically cleared when the transceiver receives a signal. See p. 28 for setting the transceiver in the scan clear condition.

8-1 DISASSEMBLING THE TRANSCEIVER

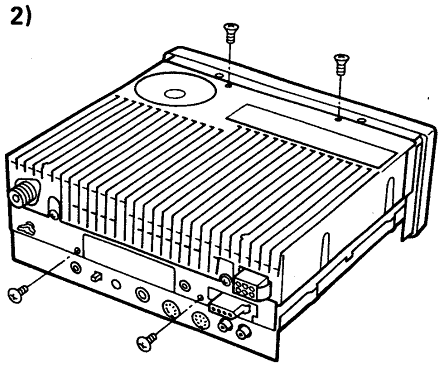
Follow the transceiver disassembly procedures shown here when you want to install an option or replace a component.

CAUTION: **DISCONNECT** the DC power cable from the transceiver before performing any work on the transceiver.

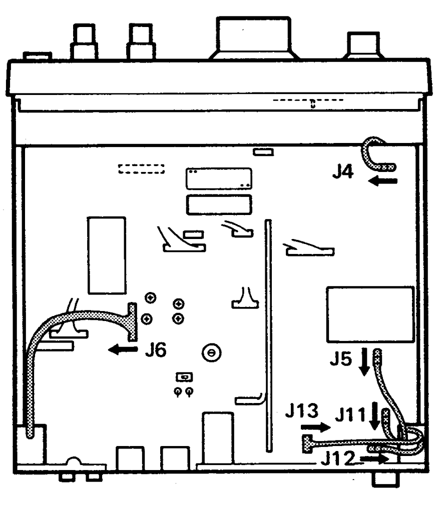
■ REMOVING COVERS
(Fig. 1)



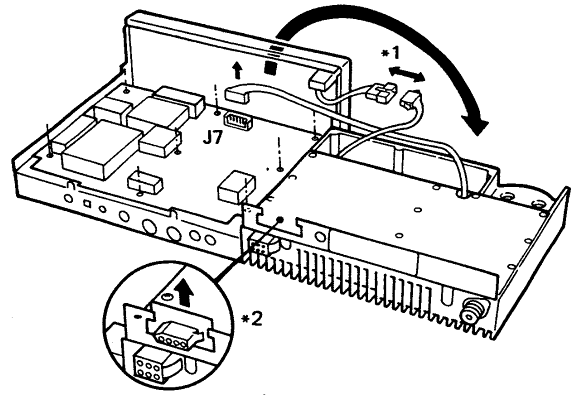
■ REMOVING PA UNIT SCREWS
(Fig. 2)



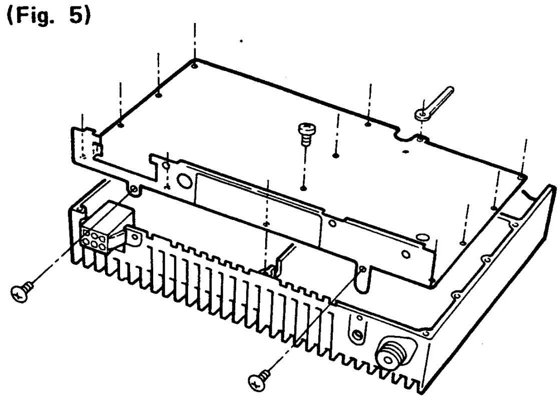
■ PREPARATION FOR OPENING THE PA UNIT AND LOGIC UNIT
(Fig. 3)



■ OPENING THE PA UNIT
(Fig. 4)



■ REMOVING THE PA UNIT SHIELD COVER
(Fig. 5)



1) To remove top and bottom covers, unscrew the 16 screws shown in the diagram. (Fig. 1)

2) Unscrew the 4 screws shown in the diagram before opening the PA UNIT. (Fig. 2)

3) Unplug 2 plugs from J11 and J12 as shown in the diagram. (Fig. 3)

4) Disconnect the 8-pin connector from J7 on the PLL UNIT as shown in the diagram. (Fig. 4)

5) Disconnect the black connector (indicated by *1). (Fig. 4)

6) Slide up and remove the TUNER CONTROL SOCKET (indicated by *2) from the holder. (Fig. 4)

7) Open the PA UNIT as shown in the diagram. (Fig. 5)

8) Unscrew the 16 screws to remove the PA UNIT shield cover as shown in the diagram. (Fig. 5)

9) To remove the PLL UNIT, unplug the 4 plugs from J4, J5, J6 and J13 on the MAIN UNIT. (Fig. 3)
   - See pgs. 31 and 32 for the plugs connection information.

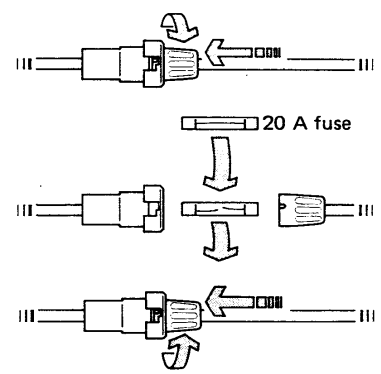
8-2 FUSE REPLACEMENT

If the fuse blows or the transceiver stops functioning, find the source of the problem if possible, and replace the damaged fuse with a new, rated fuse.

CAUTION: Disconnect the DC power cable from the DC POWER SOCKET on the rear panel when changing the fuse.

- DC power cable fuses 20A
- Circuitry fuse . . . . F.G.M.B. 125 V, 4 A

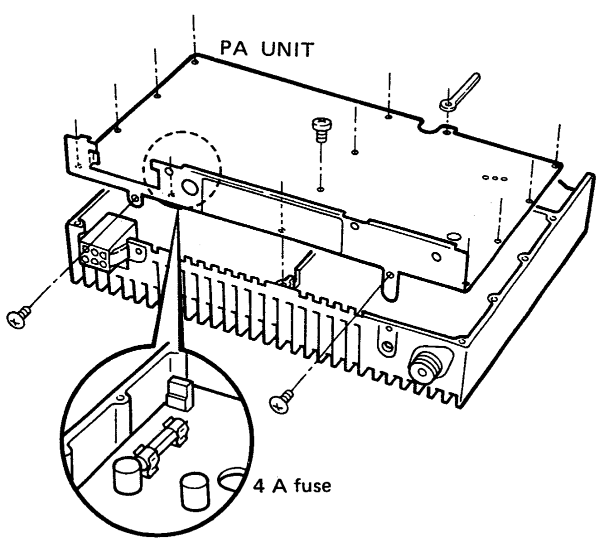
•DC LINE FUSE REPLACEMENT



•CIRCUITRY FUSE REPLACEMENT

The fuse is installed in the PA UNIT. 12 V of DC power are applied to the circuitry in the IC-725 through the DC line fuse and the PA circuit.

See p. 24 before removing the IC-725 covers.



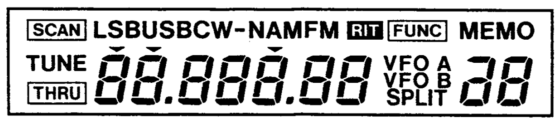
8-3 CPU RESETTING

The FREQUENCY DISPLAY may occasionally display erroneous information, e.g., when first applying power. This may be caused externally by static electricity or other factors.

If this problem occurs, turn the [POWER] switch OFF. Wait a few seconds, and then turn ON power again. If the problem continues, perform the following procedure:

NOTE: CPU resetting clears all memory information.

1) Turn the [POWER] switch OFF.
2) Push and hold the [FUNC] and [MW] switches, and push the [POWER] switch IN.
   - All information is displayed for a couple seconds then 14.1000 MHz is displayed.



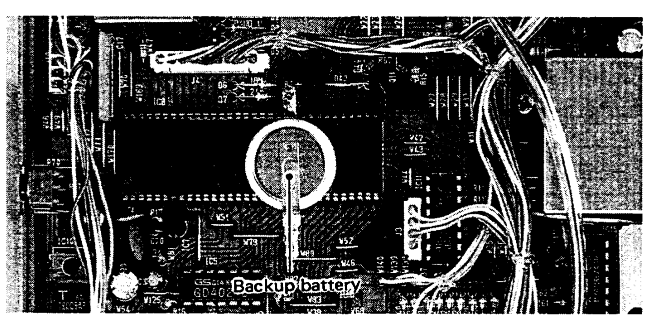
3) Release switches. The CPU is now reset.

8-4 CPU BACKUP BATTERY

The IC-725 has a lithium backup battery for retaining memory information.

The usual life of the backup battery is approximately five years. When the battery is exhausted, the transceiver transmits and receives normally but the transceiver cannot retain memory information.

NOTE: Backup battery replacement should be done by an authorized Icom Dealer or Service Center.



8-5 CLEANING

If the transceiver becomes dusty or dirty, wipe it clean with a dry, soft cloth. Avoid the use of strong cleaning agents such as benzine or alcohol as they may damage the surfaces of the transceiver.

8-6 TROUBLESHOOTING

The following chart is designed to help you correct problems which are not equipment malfunctions.

If you are not able to locate the cause of a problem or solve it through the use of this chart, contact your nearest Icom Service Center or Dealer.

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
• Power does not come on when the [POWER] switch is pushed.	• Power cable is improperly connected.	• Reconnect the power cable securely.	p. 7
	• Fuse is blown. (Fuses are installed in two places. One is installed in the DC power cable and the other is installed in the PA unit. See p. 25 for their locations.)	• Check for the cause, then replace the fuse with a spare one. DC power cable PA UNIT	p. 25
	• Battery is exhausted.	• Check the battery voltage with the transceiver turned ON.	p. 7
• No sound comes from the speaker.	• Volume level is too low.	• Rotate the [AF] control clockwise to obtain a suitable listening level.	p. 15
	• The squelch is closed.	• Rotate the [SQL] control counterclockwise to open the squelch.	p. 15
	• The transceiver is in transmit mode.	• Push the [TRANSMIT] switch to the out position to return to receive mode.	p. 2
	• An external speaker or headphones are in use.	• Check the external speaker or headphones plug connection.	p. 6
	• The transceiver is in FM mode.	• Operating in FM mode requires an optional UI-7 AM • FM UNIT.	p. 20
	• The transceiver is in CW narrow mode.	• Operating CW narrow mode requires either the FL-100 or FL-101 (sold separately).	p. 18
• Sensitivity is low.	• The antenna feedline is cut or shorted.	• Check the feedline and correct any improper conditions.	p. 5
	• Attenuator circuit is inserted in the RF circuit.	• Push the [ATT] switch to the out position to disconnect the circuit.	p. 15
	• Antenna is not properly tuned when using the AH-3.	• Push the [TUNE] switch to tune the antenna.	p. 10
• Receive signal is distorted with strong signals.	• The noise blanker function is turned ON.	• Push the [NB] switch to the out position to turn OFF the function.	p. 15
• Output power is low.	• Output power is set at low.	• Rotate the [RF PWR] control clockwise. Clockwise rotation increases the power.	p. 16
	• Mic gain is set at low.	• Rotate the [MIC] control clockwise. Clockwise rotation increases the mic gain.	p. 16
	• The antenna feedline is cut or shorted.	• Check the feedline and correct any improper conditions.	p. 5
	• Operating mode is set to AM.	• The transceiver outputs 40 W maximum in AM.	p. 19
• No contact possible with another station.	• Transmit and receive frequencies are not the same.	• Push the [RIT] switch to turn OFF the function.	p. 15
• Transmitted signals are distorted.	• The mic gain is set too high.	• Rotate the [MIC] control counterclockwise to reduce the gain.	p. 16
• The displayed frequency does not change properly.	• The dial lock function is activated.	• Push the [LOCK] switch to the out position to release the function.	p. 2
	• The internal CPU has malfunctioned.	• Turn the power OFF. Then turn the power ON again while pushing the [FUNC] and [MW] switches.	p. 25
• Scan does not operate.	• Squelch is open.	• Set the squelch threshold point.	p. 15
	• Both scan edges are set improperly for Programmed scan.	• Reset scan edges.	p. 23
	• Frequencies are not memorized in memory channels for Memory scan.	• Program frequencies into memory channels.	p. 22
• All programmed memories have been erased.	• The backup battery is empty.	• Replace the backup battery.	p. 25
• All memory channels are not displayed.	• The [LOCK] switch is pushed IN.	• Push the [LOCK] switch OUT.	p. 22

8-7 ADJUSTMENTS

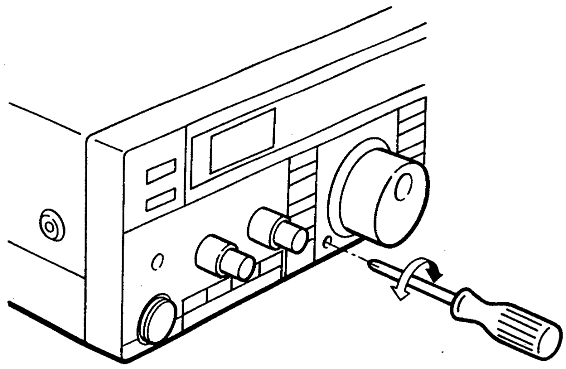
Your IC-725 has been thoroughly adjusted and checked at the factory before being shipped.

All adjustable trimmers and coils should be adjusted by an authorized Icom Dealer or Service Center. Your transceiver warranty does not cover problems caused by unauthorized internal adjustments.

(1) MAIN DIAL BRAKE ADJUSTMENT

The tension of the MAIN DIAL may be adjusted to suit your operating requirements.

• ADJUSTMENT POSITION



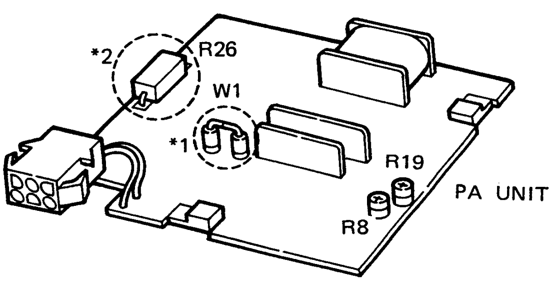
1) The brake adjustment screw is located on the left side of the MAIN DIAL.

2) Turn the brake adjustment screw clockwise or counterclockwise to a comfortable tension level while turning the MAIN DIAL continuously and evenly in one direction.

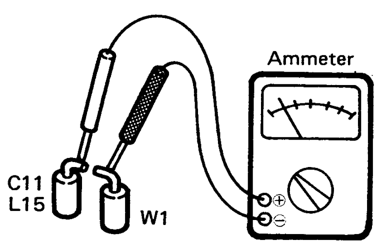
(2) PA UNIT IDLING CURRENT

The PA unit operates with a linear amplifier and requires some idling current to flow through the driver and final transistors to obtain bias voltage.

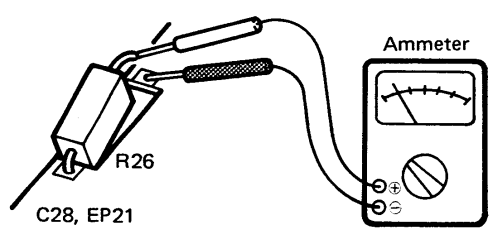
• PA UNIT



• DRIVER TRANSISTORS IDLING CURRENT



• FINAL TRANSISTORS IDLING CURRENT



1) Preparation:

[POWER] switch	→	OFF
[MIC] control	→	Max. counterclockwise
[RF PWR] control	→	Max. counterclockwise
Microphone	→	Disconnect
Ammeter	→	100 mA range for driver transistors 500 mA range for final transistors

2) Unsolder points indicated by *1 and *2.

3) Properly connect test leads to points. See diagrams for the driver and final amp. adjustments.

4) Turn transceiver power ON.

5) Push the [SSB] switch to select LSB or USB mode.

6) Push the [TRANSMIT] switch IN to transmit.

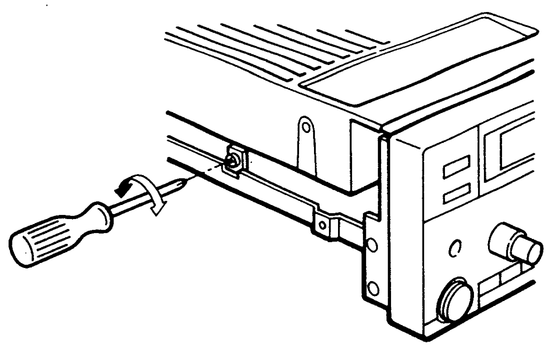
7) Adjust R8 to set 50 mA for the driver amp.
Adjust R19 to set 300 mA for the final amp.

8) Turn transceiver power OFF.

9) Re-solder the de-soldered points.

(3) RIT CONTROL

• **ADJUSTMENT POSITION**



1) Rotate the [RIT] control to the center position and turn OFF the RIT function if it is turned ON.

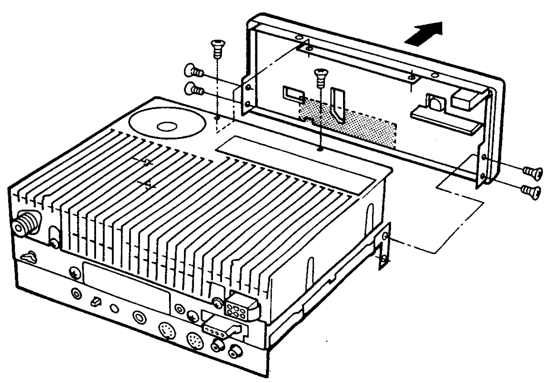
2) Receive WWV or another signal emitted as a single tone from the speaker while in LSB, USB or CW mode.

3) Push the [RIT] switch to turn ON the RIT function and adjust R70 on the PLL UNIT as shown at left to the same tone pitch as that received.

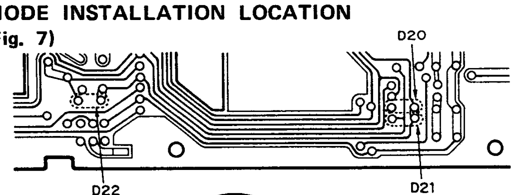
4) Turn OFF and ON the RIT function to compare two tone pitches and adjust R70 until both tone pitches are the same.

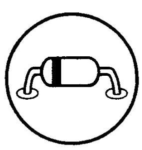
(4) SCAN FUNCTION

• **FRONT PANEL REMOVAL**



• **DIODE INSTALLATION LOCATION**
(Fig. 7)





Insert a diode as shown in the diagram at left.

By inserting a silicon diode (sold separately) in the position indicated, the following functions can be changed:

DIODE	DEFAULT	AFTER MODIFICATION	REF.
D20	Scan resume	Scan clear	p. 23
D21	Faster scan speed	Slower scan speed	p. 23
D22	Faster scan speed with mic [UP]/[DOWN]	Slower scan speed with mic [UP]/[DOWN]	p. 3

1) Unscrew the 6 screws and remove the front panel from the transceiver body.

2) Diode leads should be bent and cut before inserting them into the P.C. board.

3) Insert a diode. Make sure it is inserted in the proper direction and in the desired position.

4) Solder leads.

(5) BFO

The BFO adjustment requires an accurate frequency counter (less than ±1 ppm).

Connect the frequency counter to R266 on the MAIN UNIT. See p. 31 for the exact location.

Make the adjustments shown in the table at right in numerical order.

	MODE	FREQUENCY	ADJUSTMENT
1	USB	9.01300 MHz	C294
2	CW transmit	9.01060 MHz	L83
3	LSB	9.01000 MHz	L82
4	CW receive	9.00980 MHz	Verify
5	AM	No oscillation	-----

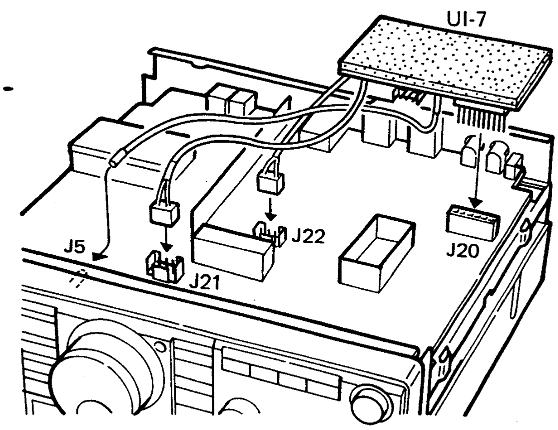
(6) OTHER ADJUSTMENTS

See pgs. 31 and 32 for information regarding other adjustments.

9 INSTALLATION OF OPTIONS

9-1 UI-7 AM·FM UNIT

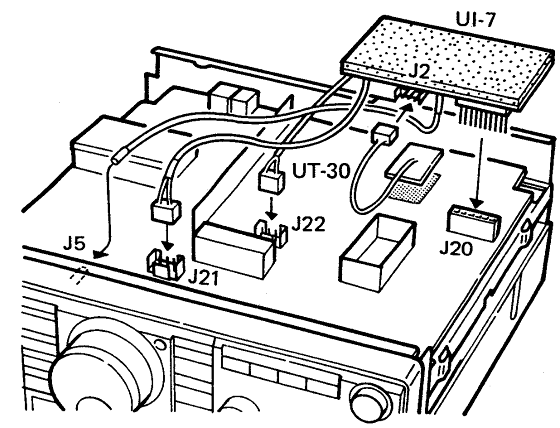
This unit provides AM transmit and FM transmit/receive capability.



1) Remove top and bottom covers.
2) Install the UI-7 in the location shown at left.
3) Properly insert the 10-pin plug on the UI-7 to J20 on the MAIN UNIT.
4) Connect the two 3-pin plugs from the UI-7 to J21 and J22 on the MAIN UNIT respectively.
5) Connect the supplied brown wire between J5 on the FRONT UNIT and J3 on the UI-7.
6) Combine wire harnesses using the supplied wire tie.
7) Replace covers.

9-2 UT-30 PROGRAMMABLE TONE ENCODER UNIT

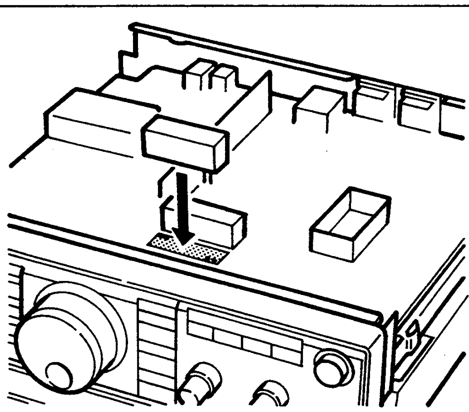
The UT-30 has 38 programmable tones available. The optional UI-7 AM · FM UNIT is necessary.



1) Remove top and bottom covers.
2) Remove the UI-7 from the MAIN UNIT if it is installed.
3) Remove the protective paper from the back of the UT-30 to expose the adhesive strip.
4) Install the unit in the location shown on the MAIN UNIT. See the diagram at left.
5) Connect the 3-pin plug on the UT-30 to J2 on the UI-7.
6) Install the UI-7 on the MAIN UNIT. See Section 9 - 1 for the unit installation location.

9-3 CW NARROW FILTERS

The optional FL-100 and FL-101 CW NARROW FILTERS are available.

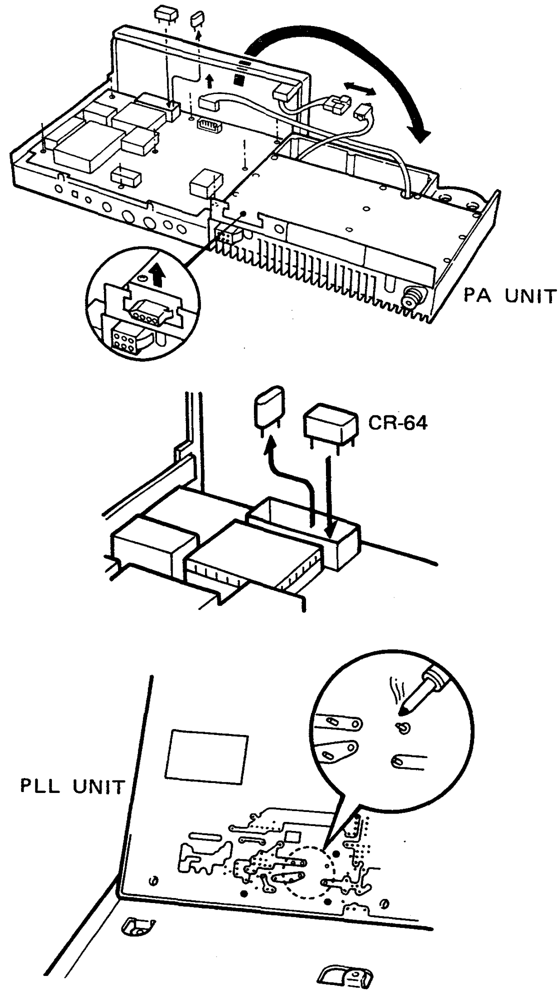


FL-100	500 Hz/–6 dB
FL-101	250 Hz/–6dB

1) Remove the bottom cover.
2) Insert a filter to the proper position. The location is shown in the diagram at left.
   - The filter works regardless of which direction it is inserted in.
3) Replace the cover. See p. 18 for CW operation.

9-4 CR-64 HIGH-STABILITY CRYSTAL UNIT

By replacing the original crystal unit with this unit, the total frequency stability of the transceiver will be improved.



CR-64 frequency stability: ±0.5 ppm
(−30°C ~ +60°C,
−22°F ~ +140°F)

1) Remove covers and the PLL UNIT following the disassembly procedures on p. 24.

2) Remove the crystal unit from the P.C. board (PLL UNIT).

3) Unsolder the 4 positions on the P.C. board where the CR-64 will be installed. Use a de-soldering braid.

4) Install the unit flush with the P.C. board and in the proper direction.
   - For correct installation, symbols on the bottom of the CR-64 must be identically matched with symbols on the P.C. board.

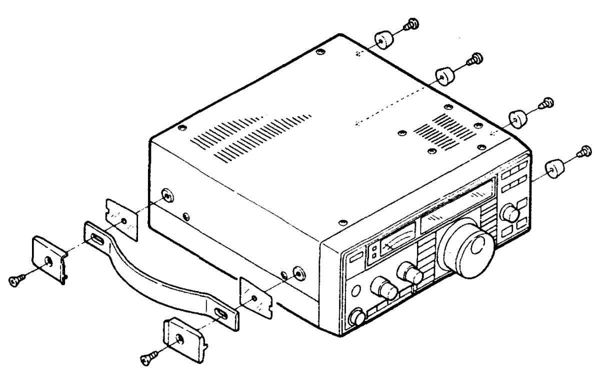
5) Bend the unit leads flush with the foil side of the P.C. board and solder them.

6) Trim the leads even with the solder points.

7) Replace the P.C. board and covers.

9-5 MB-23 CARRYING HANDLE

The handle allows you to easily carry and transport the transceiver.

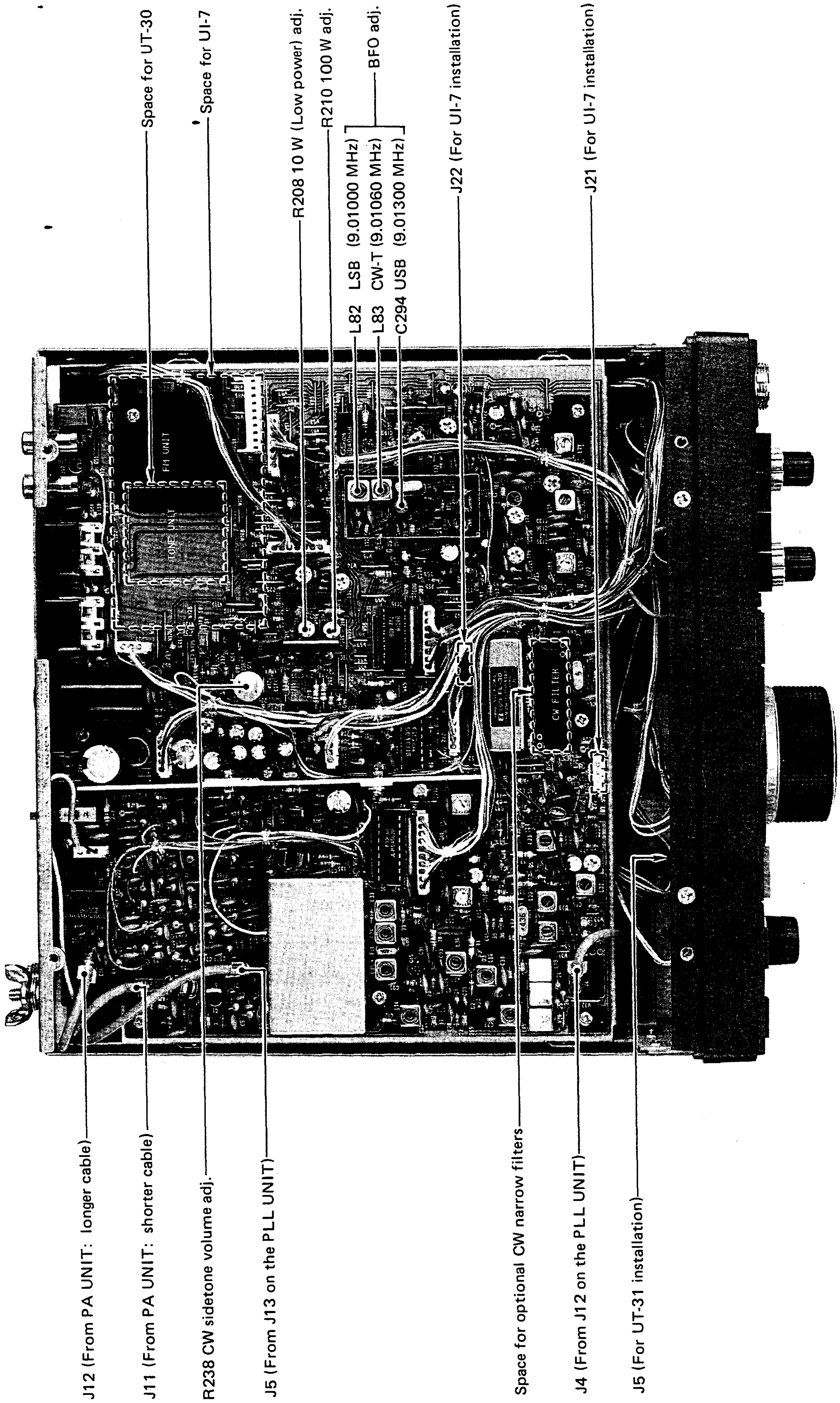


Attach the MB-23 as shown in the diagram.

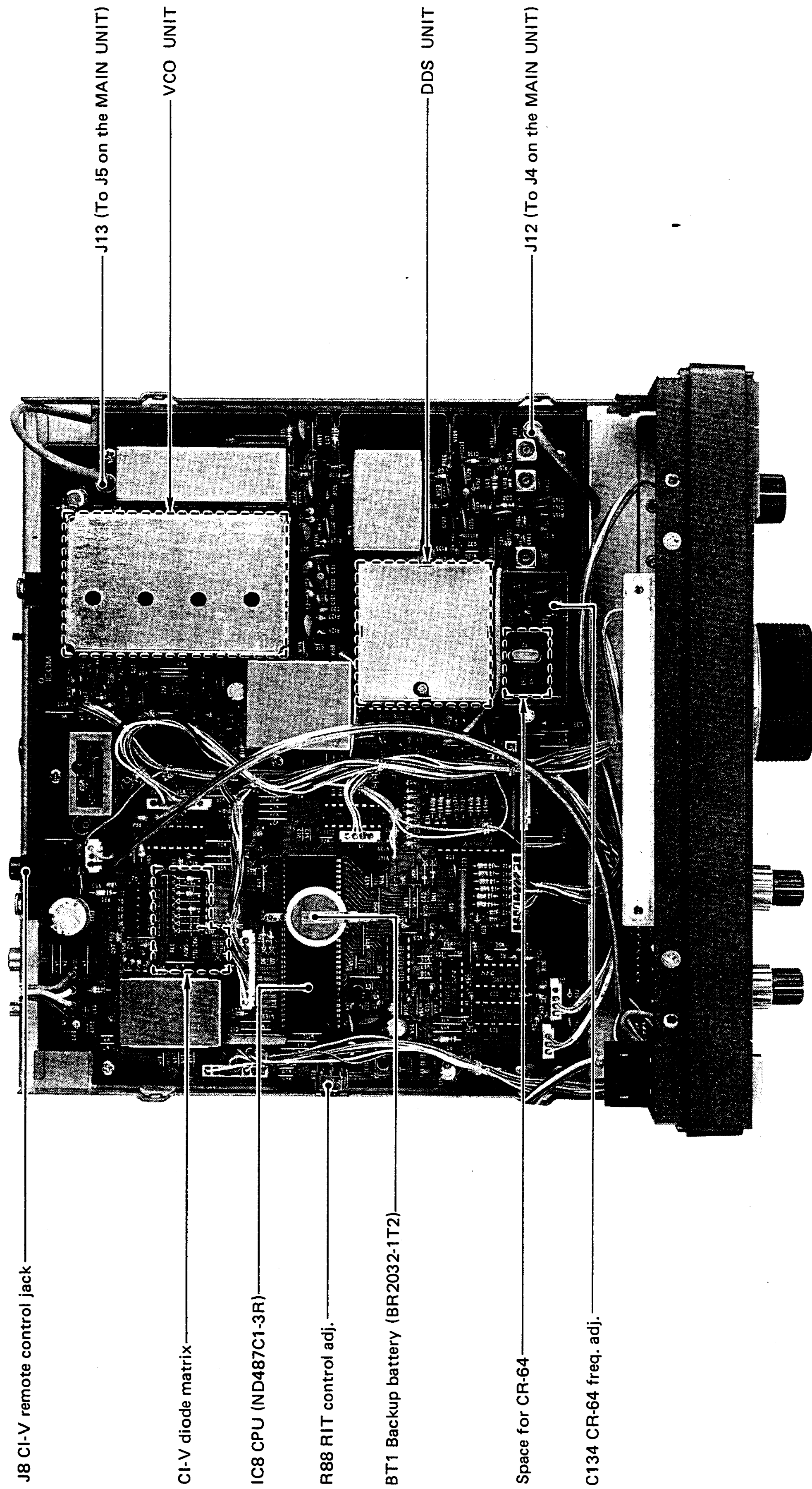
NOTE:
Supplied screws with the MB-23 **CANNOT** be used with the IC-725. Please use the screws supplied in the IC-725 unpacking to correctly attach the MB-23.

10 INSIDE VIEWS

10-1 MAIN UNIT



10-2 PLL UNIT


J13 (To J5 on the MAIN UNIT)
VCO UNIT
DDS UNIT
J12 (To J4 on the MAIN UNIT)
J8 CI-V remote control jack
CI-V diode matrix
IC8 CPU (ND487C1-3R)
R88 RIT control adj.
BT1 Backup battery (BR2032-1T2)
Space for CR-64
C134 CR-64 freq. adj.

■ GENERAL

• **Frequency coverage:**

Receive	500 kHz ~ 30 MHz
Transmit	1.80000 ~ 1.99999 MHz
	3.40000 ~ 4.09999 MHz
	6.90000 ~ 7.49999 MHz
	9.90000 ~ 10.49999 MHz
	13.90000 ~ 14.49999 MHz
	17.90000 ~ 18.49999 MHz
	20.90000 ~ 21.49999 MHz
	24.40000 ~ 25.09999 MHz
	27.90000 ~ 30.00000 MHz

• **Modes:**
SSB (A3J), CW (A1), AM (A3), FM (F3)
(UI-7 AM • FM UNIT required for AM transmit and FM transmit/receive.)

• **Number of memory channels:**
26

• **Antenna impedance:**
50 Ω unbalanced

• **Usable temperature range:**
−10°C ~ +60°C (+14°F ~ +140°F)

• **Frequency stability:**
Less than ±200 Hz up to one hour after power is turned ON.
Less than ±30 Hz after one hour at +25°C (+77°F).
Less than ±350 Hz at 0°C ~ +50°C (+32°F ~ +122°F).

• **Power supply requirement:**
13.8 V DC ±15%, negative ground

• **Current drain (at 13.8 V DC):**

Receive	squelched	1.2 A
	max. audio output	1.5 A
Transmit	20 A	

• **Dimensions:**
241 (W) x 94 (H) x 239 (D) mm
9.5 (W) x 3.7 (H) x 9.4 (D) in
(Projections not included)

• **Weight:**
4.6 kg (10.1 lb)

■ TRANSMITTER

• **Output power**

SSB, CW, FM	10 ~ 100 W continuously adjustable
AM	10 ~ 40 W continuously adjustable

• **Spurious emissions:**
More than 50 dB below peak output power

• **Carrier suppression:**
More than 40 dB below peak output power

• **Unwanted sideband:**
More than 50 dB down with 1 kHz AF input

• **Microphone impedance:**
600 Ω

■ RECEIVER:

• **Receive system:**

SSB, CW, AM	Double-conversion superheterodyne
FM	Triple-conversion superheterodyne

• **Intermediate frequencies:**

1st	SSB	70.4515 MHz
	CW	70.4506 MHz
	AM, FM	75.4500 MHz
2nd	SSB	9.0115 MHz
	CW	9.0106 MHz
	AM, FM	9.0100 MHz
3rd	FM	455 kHz

• **Sensitivity (preamplifier ON):**
(1.8 ~ 30 MHz)

SSB, CW	Less than 0.15 μV for 10 dB S/N
AM	Less than 2.0 μV for 10 dB S/N

(28 ~ 30 MHz)

FM	Less than 0.5 μV for 12 dB SINAD

• **FM squelch sensitivity:**
Less than 0.3 μV (preamplifier ON)

• **Selectivity:**

SSB, CW	More than	2.3 kHz/−6 dB
	Less than	4.0 kHz/−60 dB
AM	More than	6.0 kHz/−6 dB
	Less than	20.0 kHz/−40 dB
FM	More than	15 kHz/−6 dB
	Less than	30 kHz/−50 dB

• **Spurious response rejection:**
More than 70 dB

• **Audio output impedance:**
8 Ω

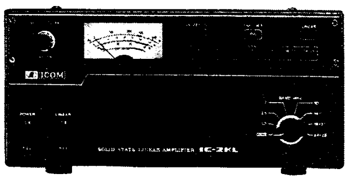
• **Audio output power:**
More than 2.6 W at 10% distortion with an 8 Ω load.

• **RIT variable range:**
More than ±1 kHz

All stated specifications are subject to change without notice or obligation.

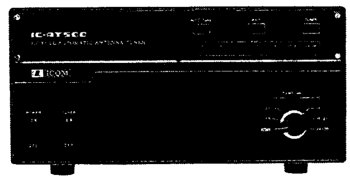
13 OPTIONS

IC-2KL HF 500 W LINEAR AMPLIFIER



This is an all solid-state 500 W linear amplifier (including final transistors).

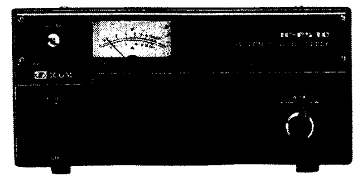
IC-AT500 500 W AUTOMATIC ANTENNA TUNER



Matches IC-725 to an antenna system.

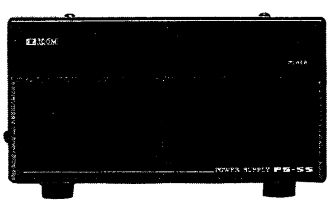
- Matching impedance : 16.7 ~ 150 Ω
- Input power rating : 500 W

IC-PS30 AC POWER SUPPLY



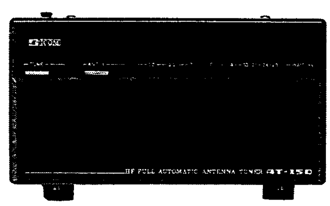
Provides 13.8 V DC output and 25 A maximum. Comes with 3 extra output connectors.

PS-55 AC POWER SUPPLY



Style and size are matched with the IC-725. Provides 13.8 V DC output and 20 A maximum.

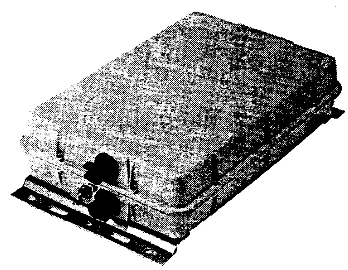
AT-150 150 W AUTOMATIC ANTENNA TUNER



Matches IC-725 to an antenna system.

- Matching impedance : 16.7 ~ 150 Ω
- Input power rating : 150 W

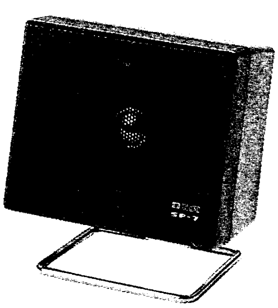
AH-3 HF AUTOMATIC ANTENNA TUNER



Matches IC-725 to an antenna system, especially for portable operation.

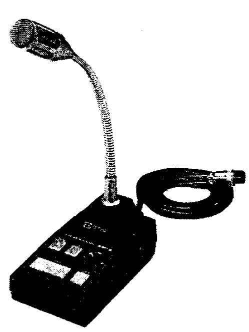
- Input power rating : 150 W

SP-7 EXTERNAL SPEAKER



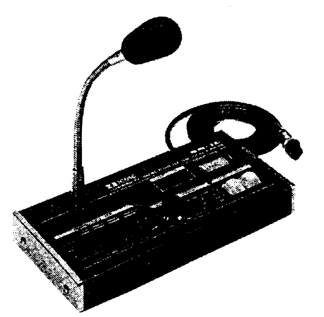
An external speaker built for base station operation.

SM-8 DESK TOP MICROPHONE



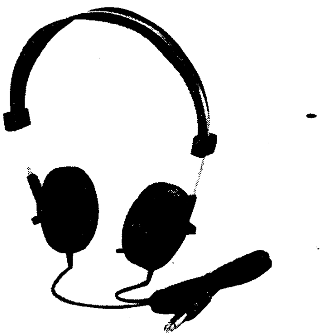
UP/DOWN switches included. Can be connected to 2 transceivers when an optional cable (OPC-088) is used.

SM-10 COMPRESSOR/GRAPHIC EQUALIZER DESK TOP MICRO-PHONE



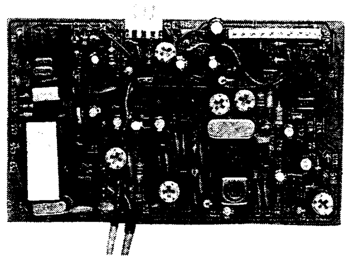
The built-in tunable equalizer allows maximum control of the audio characteristics of your transmitted signal.

HP-2 COMMUNICATION HEADPHONES



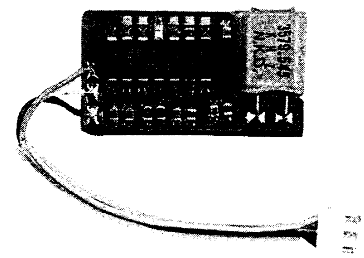
Provides clean audio and privacy in noisy environments.

UI-7 AM • FM UNIT



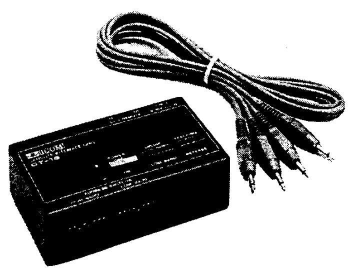
AM transmit and FM transmit/receive unit.

UT-30 PROGRAMMABLE TONE ENCODER UNIT



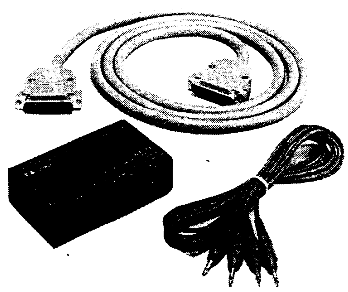
38 programmable tones available. (FM mode operation requires the UI-7 AM • FM UNIT.)

CT-16 SATELLITE INTERFACE UNIT



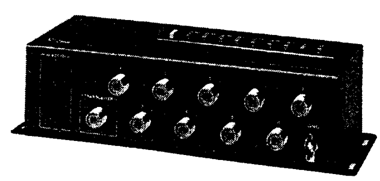
Easy tuning for instant satellite communications.

CT-17 CI-V LEVEL CONVERTER



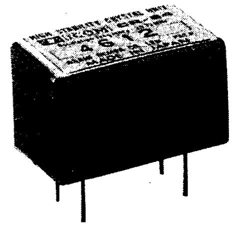
For remote transceiver control using a personal computer equipped with an RS-232C output port. You can change operating frequencies, memory channels, etc., with your computer keyboard.

EX-627 HF AUTOMATIC ANTENNA SELECTOR



When connected to an Icom HF transceiver and up to 7 antennas, the EX-627 automatically selects the antenna for the band on which you are operating. (Manual selection is also possible.)

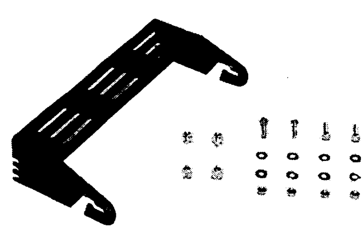
CR-64 HIGH-STABILITY CRYSTAL UNIT



Contains a temperature-compensating oven heater and crystal unit for improved frequency stability.

- Frequency stability :
  0.5 ppm at –30°C ~ +60°C
  (–22°F ~ +140°F)

IC-MB5 MOBILE MOUNTING BRACKET



Transceiver bracket for mobile operation.

CW NARROW FILTERS

Have good shape factor and provide you with better CW reception.

- FL-100 : 500 Hz/–6 dB
- FL-101 : 250 Hz/–6 dB

WR-200/WR-2000 SWR & POWER METERS

High reliability SWR and power meters. WR-200 input power rated at 200 W. WR-2000 input power rated at 2 kW.

Count on us!

A-5029-1EX
Printed in Japan

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